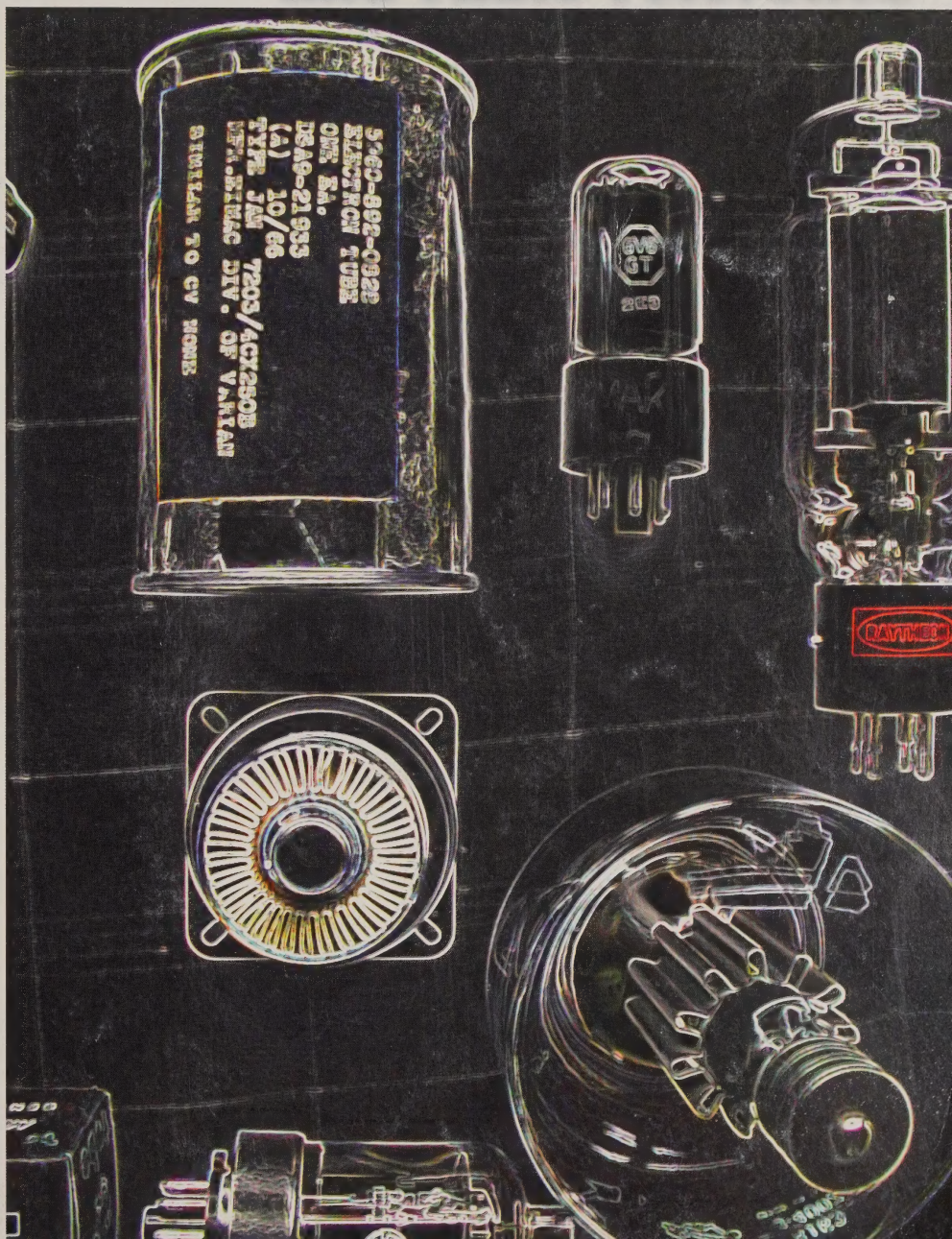
2006–2007

CALL BOOK

and radio reference



NEW ZEALAND ASSOCIATION OF RADIO TRANSMITTERS INC

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Broadcast from Levin

Founder
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ZL2GB

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ZLXA 3935 kHz

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First Floor, Levin Shopping Mall
NZ Radio For The Print Disabled (Inc)

PO Box 360, Levin
For e-mail, refer to website: www.radioreading.org

We read whole information as it is printed from:

- Newspapers
- Magazines
- Periodicals

This is a non-commercial, voluntary, Radio Station, established and operated by **New Zealand Radio For the Print Disabled (Inc).** The station commenced broadcasting on May 9 1987 and is funded from: donations, subscriptions, bequests and limited sponsorship along with assistance from **New Zealand On Air. Listeners' Comments and Reception Reports are particularly valued by the Station and are acknowledged with a QSL card.**

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Phone (03) 366-8628

2006/2007 NEW ZEALAND AMATEUR RADIO CALL BOOK AND RADIO REFERENCE

OFFICIAL JOURNAL OF THE NEW ZEALAND ASSOCIATION OF RADIO TRANSMITTERS INC.

ISSN 0110–5537

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The Amateur's Code

1 ***The Amateur is Considerate ...***
never knowingly using the air in such a way as to lessen the pleasure of others.

2 ***The Amateur is Loyal ...***
offering loyalty, encouragement and support to fellow radio amateurs, local clubs and to the New Zealand Association of Radio Transmitters, through which Amateur Radio is represented in New Zealand.

3 ***The Amateur is Progressive ...***
keeping his or her station abreast of science. It is well-built and efficient. His or her operating practice is above reproach.

4 ***The Amateur is Friendly ...***
slow and patient sending when requested, friendly advice and counsel to the beginner, kindly assistance, co-operation and consideration of the interests of others; these are the marks of the amateur spirit.

5 ***The Amateur is Balanced ...***
radio is a hobby. It is never allowed to interfere with any of the duties owing to home, job, school, or community.

6 ***The Amateur is Patriotic ...***
with knowledge and station always ready for the service of country and community.

—PAUL M. SEGAL
ex-W3EEA, W9EEA
(Amended by the Editor)

AMATEUR RADIO

What is Amateur Radio?

Amateur Radio, also affectionately known as "ham radio", is a hobby of constructing, experimenting and communicating. In New Zealand hams are licensed by the Ministry of Economic Development (Radio Spectrum Management). Once licensed, an amateur can operate radio equipment from home, from their vehicle and from anywhere in New Zealand. A number of radio frequencies have been set aside for Amateur Radio use. On these frequencies a ham can talk across town or around the world. The scope and possibilities are endless—from sending TV pictures to operating through Amateur Radio satellites.

Who can be Hams?

Just about anyone can become a ham. Some famous people such as Kings and Prime Ministers are hams, but most are just people from all walks of life who like communicating. Young people find Amateur Radio a great training ground, older people find "hamming" an absorbing retirement hobby.

In fact Amateur Radio is more than a hobby, it is a service. Hams provide their equipment and operating skills whenever the need arises—such as for Civil Defence emergencies and Search and Rescue operations.

How do I become a Ham?

Passing a ham licence is quite easy. For a limited licence correctly answer 40 of 60 questions from a multi-choice question paper. The questions cover radio theory and regulations from a public-domain question-bank. As a newly licensed ham you will be able to operate on amateur bands below 5 MHz. After three months operation with 50 logged contacts you will be able to operate on all New Zealand amateurs bands..

Where do I get more information?

The New Zealand Association of Radio Transmitters (Inc.) is a non-profit association of Amateur Radio Operators. NZART has clubs and instructors in most larger cities and towns. For more information on Amateur Radio and details of club and licensing courses near you, contact:

The Business Manager, NZART, Freepost 3565, P.O. Box 40-525, Upper Hutt.

Email: nzart@nzart.org.nz World Wide Web: http://www.nzart.org.nz

New Zealand Association of Radio Transmitters

INC

(Founder Member of the International Amateur Radio Union Region 3)

Mail to: FREEPOST 3565, OFFICE MANAGER, PO BOX 40-525, UPPER HUTT 6415, NEW ZEALAND

PLEASE ENROL ME AS A NEW MEMBER AS FOLLOWS:

TRANSMITTING ☐ NON-TRANSMITTING ☐ STUDENT ☐ FAMILY ☐ OVERSEAS ☐ ASSOCIATE ☐ CONCESSIONARY ☐

MR MS MRS MISS	INITIALS	SURNAME	CALL-SIGN
ADDRESS			PREFERRED BRANCH, NAME OR NO
			PLEASE FIND ENCLOSED $
			MY SUBSCRIPTION TO Dec 31 2007
OCCUPATION		DATE OF BIRTH	I agree to abide by the NZART Constitution Signature:

The information requested (other than date of birth) is for membership records required to be maintained under the Incorporated Societies' Act 1908.

Date of Birth is requested for statistical purposes only.

Membership benefits include the automatic inclusion of transmitting call-sign holders' address details in *Call Book* (published annually).

If you DO NOT wish your details published please sign below:

I DO NOT want my address details published by NZART _____

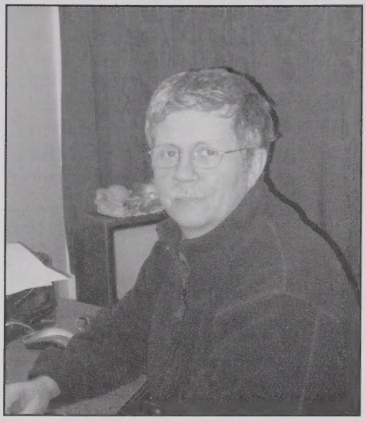
IF YOU PREFER TO PAY BY CREDIT CARD PLEASE COMPLETE

VISA ☐ MASTER CARD ☐ EXPIRY DATE

CARD No.

Signature: _____

EDITORIAL



This year's *Call Book* is the full edition complete with a CD that contains additional material that cannot be included in the printed in the hard copy due to size limitations. Included on the CD are the issues of *Break-In* for 2005 in PDF format and selected items from the Australian *Call Book*.

Thanks again to all those who have given their time to contribute to the content of this publication. I seem to be making this request every year but remember that the information in sections such as the Branch Directory can only be as accurate and current as that supplied. Some people send me their updated address details, please remember that the call-sign information published in *Call Book* is that directly downloaded off the Ministry of Economic Development (MED) database. At present we are unable to amend call-sign data due to legal constraints therefore if you require changes to your call-sign information you must advise MED; but also please advise NZART HQ so that our records can be kept current.

Doug Pratt
***Call Book* Editor**

To the Office Manager NZART
PO Box 40-525, Upper Hutt 6415

CHANGE OF ADDRESS NOTIFICATION

Name: _____ Call-sign: _____ Membership No: _____

Old Address:

_____

_____

_____

New Station Address:

_____

_____

_____ Post code: _____

Which address do you wish to appear in *Call Book*?

☐ Station ☐ Postal ☐ Both
(Please tick selection)

***Break-In* postal address (if different):**

_____

_____

_____ Post code: _____

Membership benefits include the automatic inclusion of transmitting call-sign holders address details in *Call Book* (published annually).

If you DO NOT wish your details published please sign below.

I DO NOT want my address details published by NZART _____

REMEMBER: If you change address you must notify the nearest office of the Ministry of Economic Development (Radio Spectrum Management), AND the Office Manager NZART.

Please post this form to the Office Manager NZART at the above address.

NZART

MEMBERSHIP SERVICES

New Zealand Radio Frequency Service Liaison on licencing and spectrum matters

International Representation with membership in the International Amateur Radio Union

Amateur Repeater Service co-ordination by the Frequency Management and Technical Advisory Group

Satellite Co-ordination liaison with satellite organizations worldwide

Amateur Beacon Service co-ordination by the Frequency Management and Technical Advisory Group

Satellite Support donations and fund-raising

Spectrum Bandplanning for Council by the Frequency Management and Technical Advisory Group

Public Service Involvement by the Amateur Radio Emergency Corps for Civil Defence and Search and Rescue

***Break-In* Journal** published bi-monthly six times a year

Amateur Radio *Call Book* published annually

Reciprocal Licensing advice for travellers to or from New Zealand

Publications with member discount

QSL Bureau for dispatch and collection of cards

Official Broadcast transmitted monthly

Teletext for current news and promotion

Video Tape Library for branch borrowing

Ionospheric Predictions printed bi-monthly in ***Break-In***

Slow Morse Practise for Amateur Radio Operators' Certificate

Monitoring Service to protect our bands

Contests and Awards administration; branch, national and international

Annual Conference, our national forum

VHF Convention for VHF constructors and experimenters

Technical Standards co-ordination

Third Party Insurance for NZART activities, Branches and AREC

Education and Development Group for co-ordination of Radio Training

Examination Division—organisation of Amateur Operator Certificate examinations

Bulletin Board Systems for up-to-date information and messages

Special Projects for funds for promoting radio in developing countries

Legal Advice on tower permits

Branch Services constitutional, legal, financial, etc.

NZART MEMBER'S ORDER FORM—July 2006

NZART Publications and Supplies	Price each	Non Member	Quantity required	Cost
Additional copies of *Break-In*	$6.00	$7.50		
Amateur Radio in New Zealand—The new rules explained	$8.00	$10.00		
Amateur Radio Logbook	$10.00	$12.50		
Amateur Radio Training Manual Fifth Edition (spiral bound)	$24.00	$30.00		
Call Book 2005/2006	$17.00	$21.00		
Ham Shacks, Brass Pounders & Rag Chewers	$5.00	$10.00		
Log Sheets (per 10)	$2.00	$3.00		
Secret Listening	$5.00	$7.50		
NZART Examination Questions—bound copy	$12.00	$15.00		
NZART CD ROM Study Guide	$10.00	$12.50		
NZART Badge—Call-sign	$9.30	N/A		
—Life Member of Branch	$13.60	N/A		
—OTC Blue	$9.70	N/A		
—Plain	$3.70	N/A		
Radio (AM/FM)	$30.00	$35.00		
Travel Care Kit/Clock	$20.00	$25.00		
Rotating Clock/Calendar/Stop Watch	$20.00	$25.00		
NZART Pen	$2.00	$4.00		
Satchel	$20.00	$25.00		
Plastic Coated Name Badge	$10.50	N/A		
NZART Subscription: Transmitting = $95.00; Family = $125.00; Overseas (Air) = $110.00 (surface) = $95.00; Student = $40.00				
			Total $	

Prices include GST plus P & P and are subject to change without notice. Please include full remittance with order. Non-members: add 20 per cent to all prices. Overseas members will incur additional postage dependent on country.

Examination Application Fee = $25.00

2006–2007 INFORMATION

Council

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Telephone: (04) 528-8313

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E-mail: <sayer@xtra.co.nz>

AREC Section Leaders' Net
Held on the third Monday of each month at 1930 hours on 3900 kHz USB.

Awards Manager:
Alan Chapman ZL3GX
E-mail: <awards@nzart.org.nz>
PO Box 1733, Christchurch 8140
Telephone: (03) 338-9720

Contest Manager:
John Powell ZL1BHQ
E-mail: <contests@nzart.org.nz>
47 Becroft Avenue, Forrest Hill, North Shore 0620
Telephone: (09) 410-5464

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FMTAG
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Secretary: Doug Ingham ZL2TAR
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Monitoring Service Co-ordinator:
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31 Riverside Drive, Waiuku 2123
Telephone: (09) 235-7712

IARU/Overseas Liaison Officers:
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E-mail: <qsl@nzart.org.nz>
PO Box 857, Wanganui Mail Centre, Wanganui 4540

Stolen Equipment Register:
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E-mail: <zl2kh@nzart.org.nz>
P.O. Box 6082, Moturoa, New Plymouth 4344
Telephone: (06) 758-2156 or 027 245-1406

VHF/UHF/SHF Records Co-ordinator:
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E-mail: <wysocki@clear.net.nz>
115A Epuni Street, Lower Hutt 5011
Telephone: (04) 569-9932

NZART Headquarters

Visitors welcome
Hours: 9 am–1 pm
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UPPER HUTT

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Fax: (+64-4) 528-2173
E-mail: <nzart.hq@clear.net.nz>
Postal: PO Box 40-525, Upper Hutt 5140

NZART Subscriptions

2006/2007

T	Transmitting*	$95.00
A	Associate	$95.00
B	Branch	$95.00
N	Non-Transmitting	$95.00
F	Family (Transmitting additional)	$30.00
G	Family Non-Transmitting	$30.00
S	Student	$40.00
	Overseas Surface (No GST)	$95.00
	Overseas Airmail (No GST)	$110.00

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Mark Gooding ZL2UFI
E-mail: <webmaster@nzart.org.nz>
Phone: (04) 526-8446
Fax: (04) 526-8069

***Break-In* Editor:**
J. R. L. Walker ZL3IB

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—All articles and letters to the Editor:

E-mail: <break-in@nzart.org.nz>

Editor
Break-In
PO Box 1733, CHRISTCHURCH 8140

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Advise the Business Manager
PO Box 40-525, Upper Hutt 5140

Official Broadcasts:
J. A. Meachen ZL2BHF
E-mail: <zl6a@nzart.org.nz>

The monthly NZART Official Broadcast is made by ZL6A, AUCKLAND, 3900 kHz LSB, on the last Sunday of each month except December, when the broadcast is made on the Sunday before Christmas.

The broadcast is also made on the National System and some VHF repeaters. A list of these can be found in *Break- In*.

The time of the broadcast is 2000 hours. A repeat broadcast is made at 2100 hours.

Members and Branches are welcome to submit material to ZL2BHF, C/- NZART Headquarters, PO Box 40-525, Upper Hutt 5140, for inclusion in the broadcasts.

Conference Official Broadcast

The Official Conference Broadcast is held on the Sunday of Queen's Birthday Weekend at 2000 hours.

Presidents

1926–1927	E. A. Shrimpton	Z2XA
1928	R. J. Orbell	OZ1AX
1929	R. J. Orbell	ZL1AX
1930	T. R. Clarkson	ZL1FQ
1931	H. P. V. Brown	ZL3CG
1932	D. Wilkinson	ZL2AB
1933	N. W. Laugesen	ZL3AS
1934	W. G. Collett	ZL4BP
1935	C. N. Edwards	ZL1AA
1936	W. M. Hall	ZL2BF
1937	R. B. Dodds	ZL4FK
1938	L. G. Petrie	ZL2OV
1939	F. W. Sellens	ZL2MY
1940	B. E. Jackson	ZL2FJ
1941–1942	W. Fouhy	ZL2LB
1943–1944	C. G. Liddell	ZL2BI
1945–1946	E. B. Lough	ZL2OG
1947–1949	C. G. Liddell	ZL2BI
1949–1950	J. F. Freeman	ZL2AFB
1950–1951	C. T. Berry	ZL2BY
1951–1953	W. J. Wainwright	ZL3LI
1953–1955	R. H. Hanley	ZL2GU
1955–1958	H. F. Arnold	ZL3HA
1958–1960	J. F. Freeman	ZL1VA
1960–1962	G. M. Salt	ZL1CK
1962–1964	R. T. Woodfield	ZL2VN
1964–1966	C. G. Liddell	ZL3ND
1966–1969	H. Burton	ZL2APC
1969–1970	W. R. Hamer	ZL2CD
1970–1972	D. A. Lloyd	ZL4PG
1972–1973	D. E. Cleland	ZL1IY
1973–1974	J. F. C. Johnson	ZL2AMJ
1974–1977	W. D. Gorman	ZL2IY
1977–1983	A. G. Godfrey	ZL1HV
1983–1985	D. J. Mackay	ZL3RW
1985–1991	T. D. Carrell	ZL3QL
1991–1992	T. C. King	ZL2AKW
1992–1997	J. A. Meachen	ZL2BHF
1997–2001	A. J. Wallace	ZL1AMW
2001–2005	A. P. Norden	ZL2SJ
2005–	W. L. B. Douglas	ZL2WP

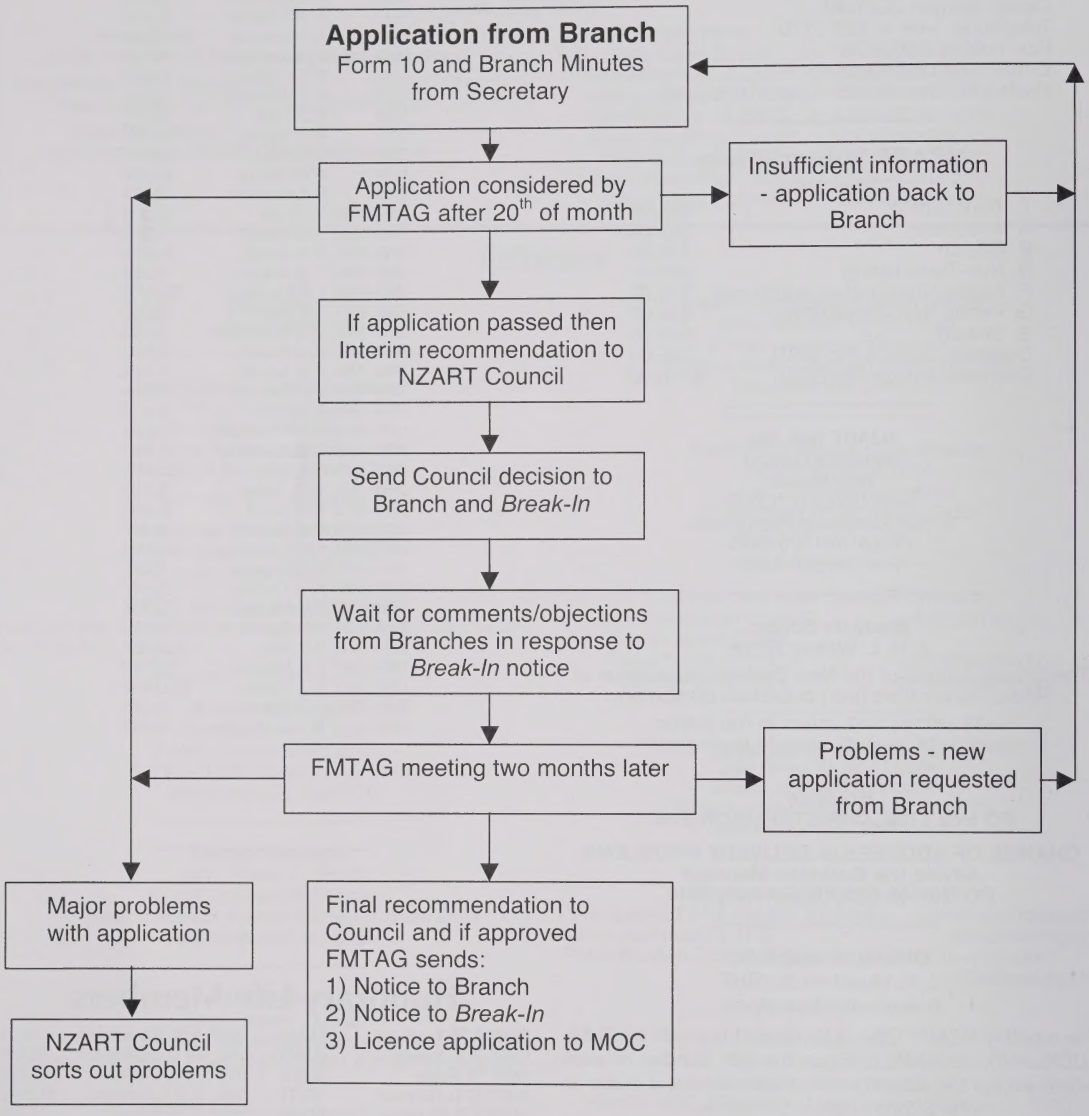
Honorary Life Members

1934*	N. W. Laugesen	ZL3AS	1980*	F. R. W. Andrews	ZL2IJ
1943*	F. W. Sellens	ZL2MY	1982	G. C. Blackwell	ZL3NT
1946*	W. Fouhy	ZL2LB	1983*	A. G. Godfrey	ZL1HV
1947*	W. D. Gorman	ZL2IY	1985	J. F. C. Johnson	ZL2AMJ
1948*	T. R. Clarkson	ZL2AZ	1986*	C. W. Parton	ZL3CP
1948*	J. F. Freeman	ZL2VU	1987*	D. Wilkinson	ZL2AB
1948*	G. M. Salt	ZL1CK	1989*	R. S. H. Morgan	ZL2GQ
1949*	A. F. Leader		1990	G. A. Kilpatrick	ZL1BBS
1950*	W. M. Hall	ZL2BH	1992*	D. J. Mackay	ZL3RW
1950*	Mrs W. Hall		1992	R. L. Baldwin	W1RU
1953*	R. Cassey	ZL2IQ	1996	R. W. G. Kingston	ZL4MK
1954*	J. G. Howard	ZL4FR	1998	R. N. Copeland	ZL2AKV
1961*	J. M. White	ZL2GX	2000	T. D. Carrell	ZL3QL
1964	H. F. Arnold	ZL3HA	2000	J. A. Meachem	ZL2BHF
1966*	C. G. Liddell	ZL3ND	2002	G. E. Bold	ZL1AN
1972*	M. R. O. Montgomery		2004	R. E. Knowles	ZL1BAD
1975*	A. R. Harris	ZL4CA	2005	J. C. Pye	ZL2NN

*Denotes deceased

FMTAG PROCEDURE

FMTAG Procedure - May 2000


Application from Branch
Form 10 and Branch Minutes from Secretary
Application considered by FMTAG after 20th of month
Insufficient information - application back to Branch
If application passed then Interim recommendation to NZART Council
Send Council decision to Branch and Break-In
Wait for comments/objections from Branches in response to Break-In notice
FMTAG meeting two months later
Problems - new application requested from Branch
Major problems with application
NZART Council sorts out problems
Final recommendation to Council and if approved FMTAG sends:
1) Notice to Branch
2) Notice to Break-In
3) Licence application to MOC

FREQUENCY MANAGEMENT TECHNICAL ADVISORY GROUP (FMTAG)

FMTAG consists of:

Chairperson, Secretary and others as appointed by NZART Council

The purpose and actions of the FMTAG are:

- Study and report to Council on matters affecting amateur radio frequencies.
- Plan future use of amateur bands
- Select frequencies for Amateur Fixed Stations
- Maintain a register of Amateur Fixed Stations
- Assists in preparing drafts for Council including submissions when needed, to the Ministry of Economic Development (Radio Spectrum Division) on behalf of the Amateur Service prior to each major ITU meeting or conference
- Bandplans are developed by the FMTAG based on IARU recommendations, local requirements, and submitted to NZART Council for approval

Application Forms for repeaters and beacons can be obtained from a NZART Councillor, NZART HQ or email your request to <fmtag@nzart.org.nz>.

Prepared by FMTAG MAY 2000

NZART Tape and Video Library

The following items may be borrowed from NZART HQ.

(1) All China RDF Competition

A serious 30 minute look at Amateur Radio Direction Finding; an official sport in China.

(2) The Happy Flyers Techniques of RDF

A 26 minute audio/visual presentation of the theory and techniques for VHF Radio Direction Finding.

(3) The Aerial Circus with Dud Charman G6CJ

45 minutes. Verification of the theory of the operation of a variety of VHF and HF antennas. See the theory confirmed by means of scale model antennas.

(4) Amateur Radio's Newest Frontier

30 minutes. A recent production from ARRL. Looks at the Radio Amateurs' involvement in space.

(5) NAREC 50

A 60 minute production by Branch 25. Looks at the Napier Conference and the 50th Anniversary of AREC.

(6) Communications—The Hidden Revolution

135 minutes. A address and demonstration by the Engineer-in-Chief, New Zealand Post Office, on modern communications techniques and methods

(7) The Integration and Launch of AMSAT OSCAR-10

35 minutes. A preview of the presentation and launch of OSCAR-10 by Werner Haus DJ5KQ.

(9) The Wonderful Wide World of Amateur Radio

27 minutes. Produced by JARL, a look at Amateur Radio in Japan.

(10) W. (Bill) Orr W6SAI Whakatane Conference Opening June 1988

20 minutes.

(11) 1987 Dayton Hamvention—a KG0P production

30 minutes.

(12) ARRL's New World of Amateur Radio 1988

Via WA6AI.

(13) W6AI Sunday 05/06/1988—Lecture on Linear Amplifiers

(14) Component Identification—ZL1TOF

18 minutes.

(15) Launch of Ariane IV 15/06/1988

(16) RSGB's Amateur Radio for Beginners.

43 minutes.

(17) Waiting for the Big One.

(18) Fuji-2 JAS-1 Japanese Amateur Satellite 1B

(19) Ham Radio In Space

30 minutes—ARRL

(20) SAREX—Shuttle Amateur Radio Experiment

19 minutes—ARRL

(21) "More Than Radios" from Zman Productions

This video is a very special message to Amateur Radio operators. It is a strong emotional video and unlike any other video you have seen about Amateur Radio.

(22) Getting Started in Packet Radio

From CQ Communications Inc. This video will help de-mystify the exciting but sometimes confusing world of Packet Radio.

(23) Getting Started in Amateur Satellites

From CQ Communications Inc. Find out how to locate and track ham satellites with ease. A video filled with easy to understand advice and tips that can't be found anywhere else.

(24) Dayton Hamvention 1996—Vaughan Henderson ZL1TGC

(25) Dxpedition May 1996 to Raoul Island—ZL8RI

(26) What's Happening in ARDF

7 minutes.

(27) ZL9CI—Campbell Island 1999—James Brookes 9V1YC

60 minutes. Further copies of this can be purchased @ $35.00+p&p, through the following e-mail address <jamesb@pacific.net.sg>.

(28) An interview with Gerald Beattie—21/June 1989—28 minutes

(29) NZART Amateur Television Official Broadcast 30 March 1986

(30) NZART 75th Anniversary Conference Auckland 2001

(31) Commemoration at Musick Point 2003

(32) ZL2AMJ Investiture at Government House August 2002

(33) The Secret Wireless War (new)

120 Minutes ; Beyond Bletchley Park & Black Propaganda.

Cost of hire for each video is $5.00 includes P & P.

CDROMS and DVDs for Hire

(1) Bell-Goyder QSO October 18, 1924

(2) 513A IOTA Yambe Island DX-pedition July 1–10, 2000

(3) NZART 75th Anniversary Conference 2001

(4) Otago Branch History (1928–2003) 75th Anniversary

(5) NZ WARO History (1962–2002)

(6) The Story of Enigma; not recommended for Branch use

(7) ARRL Ham Software Library

(8) Ham Radio CD Rom 1968–1976

(9) Ham Radio CD Rom 1977–1983

(10) Ham Radio CD Rom 1984–1990

(11) Tune in the Universe; Paul Shuch N6TX

(12) Ham Shack Brass Pounders & Rag Chewers on CD

(13) NZART Convention 2006; Radio Astronomy by Clive Rowe

(14) NZART Convention 2006; Time & Frequency by Dave Brown ZL3FJ

(15) NZART Convention 2006; How Sound Card Digital Modes Work by Murray Greenman ZL1BPU

Costs for hire of CD Rom $10 includes P & P.

NZART Examination Training DVD

The series of 15 DVDs have been completed and are available via NZART HQ. This series is very much an individual's (me!) interpretation of how to present the material. I have kept the scripting fairly informal in order to maintain the material similar to how I would teach a class in person. I have checked the material and hopefully there are no obvious errors. The level of material is at, or a little above, the question bank for the exam. In order to teach material of any kind you do need to go a little above the level of the examination at times for clarity of explanation.

The introduction on DVD1 covers this. The technical quality is quite acceptable although some of the earlier material is a little low in video resolution but still adequate; this was due to the learning curve in the process of going from digital tape to DVD.

Any suggestions/constructive criticism are welcome, please e-mail me. I would like to acknowledge the invaluable assistance given by Grant Simpson ZL2BK in the technical production and Jim Meachen ZL2BHF in cleaning up a few rogue sound tracks.—Stuart Watchman ZL2TW <zl2tw@nzart.org.nz>

BRANCHES AND MEMBERSHIP

A Policy Statement by Council (Revised 1995)

Members will be aware of the requirement in paragraph 27 of the Association's Constitution that Branches must not admit to membership persons who hold an amateur station licence, but who are not members of the Association.

Over the years there have been attempts to repeal or modify these provisions, but successive National Conferences have made it quite clear that members will have none of it. The rationale for this Constitutional provision is that it provides at least one way in which non-members can be denied the privileges which membership of the Association brings. We cannot stop our non- member brethren enjoying some benefits—such as the negotiations the Association conducts with the licensing authorities, the use of repeaters, and the enjoyment of the benefits which band plans bring. Council is firmly of the view that it is unfair to those who do pay their subscriptions if the lot of non-members is made easier by the ready availability of members' privileges which the Association is, in fact, able to withhold. Further, the Association has to take into account the feelings of its many voluntary workers, who devote many hours to Association matters, and, in addition, pay their subscriptions as well. These persons have even greater cause to complain if the Association makes benefits available to non-members who do not contribute to these benefits by at least joining the Association and paying a subscription.

Branch Officers

It is disturbing to Council to find that some Branches not only fail to have regard to their Constitutional obligations by ensuring that licensed amateurs who are not Association members do not join the Branch, but even have as Branch Officers persons who are licensed amateurs but not members of the Association. This is clearly unconstitutional. If an Officer is not an Association member, but is a licensed amateur, then there is a breach of the Association Constitution. This should also be a breach of the Branch Constitution— if it is not, the Branch Constitution is faulty and must be brought into line. (See the Association's Constitution, paragraph 27.)

Regrettably, there are still one or two clubs that indulge in a fiction— they attempt to evade their responsibilities to NZART, whether arising under paragraph 27 or otherwise, by purporting to distinguish between the local club and the NZART branch. This fiction ignores the realities, and is not acceptable. The reality is that the local club itself is the NZART Branch, and the Branch Constitution must be changed to reflect this commitment to NZART if that is necessary. Any attempt (for that is all it is) to circumvent the Association Constitution by resorting to this fiction is unfair to the local NZART members, other NZART members, and the Association itself.

Relationship between Branches and the Association

Sometimes, Branch members criticize these rules, often using catch phrases such as "breach of human rights", or "interference with independent clubs". These provisions of the Association Constitution are nothing of the sort. They are part of the contract that members make when they join the Association. By applying to become or by remaining an Association Branch, the Clubs or Branches surrender their independence to the extent required to conform with the Association's Constitution. Branches are expected to keep their houses in order; if they are not prepared to do this, then they should surrender their status as a Branch. There is nothing in the Human Rights Act to prevent the Association and its Branches from discriminating between members and non-members.

Whose job is it to be the policeman?

The answer is—nobody's and everybody's. The Association's Constitution does not specifically charge Council or any Officer with the task of enforcement. So long as we remain members, we are all parties to the contract represented by the Constitution and we each individually have that responsibility. If a Branch is Incorporated in its own right, then the Branch in its corporate capacity also has that duty.

Hardship

Hardship is not a ground for failing to become an Association member. Association subscriptions can be remitted under paragraph 7(e) of the Association's Constitution and Council will authorize this where there is genuine hardship. But Council's experience has been that the genuine hardship is rare indeed. Many claims of hardship over the years have been found, on enquiry, not to be genuine. Application for this concession should be made in person by the member. Council will then usually discreetly seek further information from the Branch. Council would expect there to be no more than half a dozen such cases throughout the country at any one time. The privacy of the applicant is respected by ensuring that as few persons as possible within the Association are aware of the Application.

Why are we telling you this now?

Council has never said anything else. But there are now some situations which create special problems for the Association.

The Association enters into contracts with public corporations and SOEs relating to right of entry for the siting of repeaters. These contracts recognize potential liability and require the Association as a condition of the contract to take public liability insurance which could be up to $2 million or more. This insurance will be taken on terms which will extend to protect both the Association and individual members. Naturally, the corporations we are dealing with take comfort in this insurance, as they know that while the insurance is in place the Association has the indemnities required to meet any claims. This means that to come within the Association's cover, individuals must be members, as the Association has no intention of paying additional premiums to insure against the actions of non-members. If an individual incurs liability as agent of the Association, then that individual must be a member to take the benefit of any cover the Association arranges. The Association will not appoint non-members as its agents, as this would nullify the insurance cover.

As Branches have responsibility with the Association for repeaters, Branch Officers are required to be Association members. This is not more than the Constitutional requirement. Because of these matters, Council will, in future, have to be more active in seeing that the Constitution is observed.

As the appointment of repeater trustees is an Association matter, even if exercised through Branches, repeater trustees must also be members. This, likewise, is a necessary consequence of the provisions of the Constitution. Council, in future, will have to ensure that repeater trustees are Association members, not only because this is a Constitutional requirement, but also to ensure that the persons responsible for the operation of repeaters have adequate insurance cover to meet the requirements of our contracts with the public corporations.

Action

Take action now to ensure that your Branch complies with the Association's Constitution. Your Councillors will help you with advice as required.

This policy statement was first published in the August 1990 Break-In. It is now reissued in a slightly revised form.

NZART Council

The Constitution of the New Zealand Association of Radio Transmitters Incorporated

is available from:

The Business Manager, NZART, Freepost 3565, PO Box 40-525, Upper Hutt 6415

or NZART URL: http://www.nzart.org.nz/nzart nzart@clear.net.nz

NZART BRANCH DIRECTORY

Alphabetical List of Branches

		Date of update
01M	Ashburton	2006
02N	Auckland	2006
66N	Auckland VHF	2005
33S	Balclutha	2006
84N	Bay of Islands	2005
04N	Cambridge	2005
15C	*Central Hawkes Bay*	2006
61S	Central Otago	2006
05M	Christchurch	2006
56M	Christchurch West	2006
51N	Eastern Bay of Plenty	2005
08S	Eastern Southland	2006
09C	*Egmont*	2006
78N	Far North	2006
70C	Feilding	2003
10C	Franklin	2006
11C	Gisborne	2006
12N	Hamilton	2006
13C	Hastings	2006
14C	*Hawera*	2006
58N	*Helensville*	2006
80N	Hibiscus Coast	2006
16C	Horowhenua	2006
79N	Howick	2006
17N	Huntly	2005
18C	Hutt Valley	2005
19C	Inglewood	2006
76M	Kaikoura	
69C	Kapiti	2006
67N	Kawerau	2006
20C	Manawatu	2006
59N	*Mangakino*	2006
21N	Manukau	2004
22C	Malborough	2006
23C	Marton	2003
44N	Matamata	2004
85N	Mercury Bay	2004
24C	Moteuka	2004
25C	Napier	2005
26C	Nelson	2006
27C	New Plymouth	2006
68M	Northern Canterbury	2006
29N	North Shore	2006
52C	*Northern Hawkes Bay*	2006
73N	Northern Wairoa	
64S	North Otago	2006
72N	Opotiki	2004
30S	Otago	2006
31C	*Pahiatua*	2006
65N	Papakura	2006
54C	*Patea*	2006
75S	*Queenstown*	2006
83N	Raglan	2006
32C	*Rahotu Coastal*	2006
62M	Reefton-Buller	2006
71M	Rodney	2005
33N	Rotorua	2006
34M	South Canterbury	2005
36M	*South Westland*	2006
24M	Southern Wairarapa	2006
37S	Southland	2006
86M	Suburban	2006
06C	Tararua	2006
38N	Taumarunui	
60N	Taupo	2006
39N	Tauranga	2006
77N	*Te Aroha*	2006
40N	Te Awamutu	2006
53N	Te Puke	2006
41N	Thames	2006
42C	Tatihi Bay	2006
57N	Tokora	2002
63C	Upper Hutt	2006
43N	Waihi	2006
81N	Waikato VHF	2006
45C	*Waimarino*	2006
46C	Wairarapa	2006
47C	Waitara	2005
55N	Waitomo	2006
48C	Wanganui	2006
50C	Wellington	2006
74C	Wellington VHF	2006
03N	Western Suburbs	2006
49M	Westland	2005
28N	Whangarei	2006
	CARDS	2006

Letter after Branch number donates electorial district – N=Northern, C=Central, M=Midland, S=Southern. *Italics* = Branches in recess.
Affiliated Branches: Canterbury Amateur Radio Development Society Inc (CARDS); Suburban Amateur Radio Club Inc.

01 Ashburton (Inc)
Branch Callsign: ZL3AF.
Physical Address: Aviation Museum, Airport Road, Ashburton.
Postal Address: 36B Burnett Street, Ashburton 8300.
President: Jim Nelson ZL3ND.
Secretary: Mike Trump ZL3TPQ.
Net Information: 144.600 MHz on Mondays at 2030 except club nights.
Contact Person: Mike Trump ZL3TPQ.
Contact Phone Number: (03) 308-7119. Email mtrump@orcon.net.nz
Meeting Information: Second Monday each month (except December and January) at 1930.

02 Auckland (Inc)
Branch Callsign: ZL1AA.
Physical Address: 400 St. Johns Road, Meadowbank, Auckland.
Postal Address: PO Box 18-003, Glen Innes, Auckland 1130.
President: Graham Hay ZL1GH.
Secretary: Bob Murphy ZL1AFU.
Net Information: 145.775 on Mondays at 2000 and 3645k Hz on Mondays at 2100.
Contact Person: Selwyn Ross ZL1BRC.
Contact Phone Number: (09) 575-8847. Email: zl1brc@nzart.org.nz
Meeting Information: Third Tuesday each month February to November at 1930 and AGM second Tuesday of December. Committee first Thursday each month (except January).
Clubrooms open on Saturday mornings from 0930.
Web: www.qsl.net/zl1aa

03 Western Suburbs Radio Club (Inc)
Branch Callsign: ZL1AC.
Physical Address: 3000 Great North Road, New Lynn, Auckland.
Postal Address: PO Box 15-122, New Lynn, Auckland 1007.
President: Andrew Barnett ZL2ALW.
Secretary: ZL1AC C/- PO Box 15-122, New Lynn.
Net Information: 146.525 on Wednesdays at 1930. 3.623 MHz on Fridays at 1930.
Contact Person: Ross Reddell ZL1VRR ross.reddell@xtra.co.nz
Contact Phone Number: (09) 629-0504
Email: ross.reddell@xtra.co.nz
Meeting Information: Second Monday of each month 1930, Committee meetings fourth Monday 1930.
Web: www.qsl.net/zl1ac

04 Cambridge Radio Club
Branch Callsign: ZL1HP.
Physical Address: 22a Taylor Street, Cambridge.
Postal Address: PO Box 650, Cambridge.
President: Peter Sadgrove ZL2UJ.
Secretary: Ian Honey ZL1AN.
Contact Person: Peter Sadgrove.
Contact Phone Number: (07) 827-6857.
Email: zl2uj@nzart.org.nz
Meeting Information: Every Tuesday of each month at 1930.

05 Christchurch Amateur Radio Club (Inc)
Branch Callsign: ZL3AC.
Physical Address: 27 Galbraith Avenue, Avonside, Christchurch.
Postal Address: PO Box 1733, Christchurch 8015.
President: John Hirtzel ZL3ADF (03) 352-6323.
Secretary: Rory Deans ZL3HB (03) 325-4181.
Net Information: Canterbury 725 (if available, otherwise on 705 repeater) on Sundays at 2000 (except last Sunday of the month) then after Official Broadcast.
Contact Person: John Hirtzel or Rory Deans.
Contact Phone Number: As above. Email: jonej@xtra.co.nz
Meeting Information: First Wednesday each month (February to December) at 1930. AREC meets on the second Wednesday at 1930. "Social get-together" every Tuesday night 1930 until late (February to December).
Web page: http//www.nzart.org.nz/branches/chch/branch05/

06 Tararua District Radio Club
Branch Callsign: ZL2IB.
Postal Address: C/- 24 York Street, Dannevirke 5491.
President: Tom Fleming ZL2TF.
Secretary: Stephen Cooper ZL2WAU.
Net Information: Every Friday Night at 2000 to 2100 on 146.650 (linked to 438.700).
Contact Person: Tom Fleming ZL2TF (06) 376-7638 Email: t.j.fleming@paradise.net.nz
Contact Person: Stephen Cooper ZL2WAU (06) 374-8288 Email: rosewoodvilla@xnet.co.nz
Meeting Information: Second Sunday each month (except December and January). Please contact club for venue.
AREC Section Leader: Stephen Cooper.

08 Eastern Southland
Branch Callsign: ZL4AL.
Postal Address: C/- PO Box 9, Wyndham
President: Dick Whyte ZL4AQ.
Secretary: Lindsay Eunson ZL4LC Email: zl4lc@nzart.org.nz
Contact Person: Alister Allan.
Contact Phone Number: (03) 208-7288 027-432-1914.
Email: anallan@woosh.co.nz
Meeting Information: Fourth Wednesday each month at the Gore Town and Country Club at 2000.

09 Egmont
In recess.

10 Franklin Amateur Radio Club (Inc)
Branch Callsign: ZL1SA.
Physical Address: Stadium Drive, Pukekohe.
Postal Address: C/- 25 John Street, Pukekohe 1800.
President: Tom McDonald ZL1TO.
Secretary: Lynnette McDonald ZL1LL.
Net Information: 3700 kHz on Sundays at 0900. Bombay 690 on Sundays at 0930.
Contact Person: Bob Holt ZL1BBZ.
Contact Phone Number: (09) 235-9549. Email: zl1ll@nzart.org.nz
Meeting Information: Third Tuesday each month at 2000.

11 Gisborne Amateur Radio Club (Inc)
Branch Callsign: ZL2AA.
Physical Address: Gisborne Cosmopolitan Clubrooms, Cnr Grey and Derby Streets, Gisborne.
Postal Address: PO Box 1017, Gisborne 3815.
President: Ric Coleman ZL2RIC.
Secretary: Pamela Campbell-Smith.
Net Information: 3685 kHz every evening from 2030. 146.800 every evening 1800.
Contact Person: Alan Makintosh ZL2AOP.
Contact Phone Number: (06) 868-6267.
Email: ricol@xtra.co.nz
Meeting Information: General meeting second Monday each month at 1930. Committee meets at private houses.

12 Hamilton Amateur Radio Club (Inc)
Branch Callsign: ZL1UX.
Physical Address: 88 Seddon Road. Hamilton.
Postal Address: PO Box 606, Hamilton 2015.
President: Robin Holdsworth ZL1IC.
Secretary: David Nation ZL1TCE.
Net Information: 3575 kHz on Mondays at 1930. 146.525 MHz on Mondays at 2000.
Contact Person: David King.
Contact Phone Number: (07) 847-1320.
Email: branch.12@nzart.org.nz
Meeting Information: Business Meeting first Wednesday at 1930 and General Meeting third Wednesday of each month (except January and December) at 1930.

13 Hastings/Havelock North
Branch Callsign: ZL2AS.
Physical Address: Surf Lifesaving Club Rooms, Winsor Park,Grove Road, Hastings.
Postal Address: PO Box 2403, Stortford Lodge, Hastings 4201
President: Warren Harris ZL2AJ.
Secretary: David Walker ZL2DW .
Net Information: 3615 kHz and 147.250 Repeater on Sundays at 0900.
Contact Person: Warren Harrris ZL2AJ.
Contact Phone Number: (06) 844-6880, 021 649-284. Email: warren@technaserve.com
Meeting Information: Fourth Wednesday each month (except December) at 1930 at Surf Lifesaving Club Rooms, Grove Road, Hastings (Splash Planet car park).

14 Hawera Amateur Radio Club
Branch Callsign: ZL2AWW.
Postal Address: 126 Fairfield Road, Hawera 4800.
Contact Person: Peter Williams ZL2AID.
Contact Phone Number: (06) 278-4292.
Meeting Information: Irregular.

15 Central Hawkes Bay Radio Club
In recess.

16 Horowhenua
Branch Callsign: ZL2DS.
Postal Address: C/- 24 Paeroa Road, RD 12 Levin
President: Kenneth Ireland ZL2KI.
Secretary: Les Jury ZL4SS.
Contact Person: Les Jury.
Contact Phone Number: (06) 367-3399. Email: zl4ss@nzart.org.nz
Meeting Information: Third Monday each month at 1930 at the Radio Reading Service Rooms
Levin Mall, Levin.

17 Huntly Radio Club
Branch Callsign: ZL1BL.
Physical Address: 520 Kainui Road, Taupiri.
Postal Address: 195 Rotongaro Road, RD 2 Huntley.
President: Terry East ZL1BGS.
Secretary Jim Williams ZL1BOS.
Contact Person: Terry East
Contact Phone Number: (07) 826-6730 or (07) 824-6805
Email: granteast1@thenet.net.nz
Meeting Information: Second Tuesday at 1930 at 520 Kaunui Road, Taupiri.

18 Hutt Valley (Inc)
Branch Callsign: ZL2HV.
Physical Address: Birch Street Reserve, Waterloo.
Postal Address: PO Box 30-519, Lower Hutt 6315.
President: Dave Williams ZL2DSW.
Secretary: Chris Purcell ZL2POS.
Net Information: 3675 kHz on Sundays at 0900.
Contact Person: Dave Williams.
Contact Phone Number: (04) 564-6713
Email: davewill@clear.net.nz
Meeting Information: First Monday each month at 1930. Also every Friday at 1930 (informal).

19 Inglewood
Branch Callsign: ZL2PT.
Physical Address: 34 James Street, Ingelwood 4651.
Postal Address: 1778 Mountain Road, RD 10, Inglewood 4651.
President: Peter Cramer ZL2AIS.
Secretary: Tarry. Martin ZL2KV.
Contact Person: Peter Cramer.
Contact Phone Number: (06) 756-7314.

20 Manawatu Amateur Radio Society (Inc)
Branch Callsign: ZL2KO.
Physical Address: 65 Totara Road, Palmerston North 5301.
Postal Address: PO Box 1718, Palmerston North.
President: P. W. Prist ZL2BOB.
Secretary: Ian Ogier ZL1AF.
Net Information: 3570kHz on Sundays at 0900. 147.125 MHz on Thursdays at 2000.
Contact Person: Stan Russell ZL2BRS.
Contact Phone: Number: (06) 358-6683 Email ianwo@clear.net.nz
Meeting Information: First Wednesday each month at 1930, fourth Wednesday 1400 for "Old Timers", fifth Wednesday 1930 social "natta session", third Wednesday at 1930 committee meeting.
Additional information: First Friday each month 1700 hours on 999 kHz for those interested "Radio Waves" a program for the amateur. This is repeated the following Thursday Radio Reading Service at 2130 hours on 1602 kHz and 3935 kHz.
Web page: http//www.zl2ko.orcon.net

21 Manukau Radio Club (Inc)
Branch Callsign: ZL1QB.
Physical Address: 8 Guide Place, Papatoetoe.
Postal Address: 8 Guide Place, Papatoetoe 1701.
President: J. Paltridge ZL1JW.
Secretary: R. A. Blair ZL1WNZ
Net Information: 3655 kHz and 146.550 MHz on Sundays at 0900.
Contact Person: Jim Paltridge ZL1JW.
Contact Phone Number: (09) 278-3389 Email: paltridge@xtra.co.nz
Meeting Information: General meeting third Wednesday each month at 1930 hours. Morning meeting third Monday 1015 hours. Construction night fourth Wednesday at 1930 hours.

22 Marlborough Amateur Radio Club (Inc)
Branch Callsign: ZL2KS.
Physical Address: Marlborough EOC, Wither Road (West Extension) Bleinheim.
Postal Address: PO Box 432, Blenheim 7315.
President: David Rothwell ZL2WDR.
Secretary: Tony Allan ZL2DOG.
Net Information: Blenheim 146.950, 145,600 and 147.225 on Mondays at 1930.
Contact Person: Tony Allan.
Contact Phone Number: (03) 579-3136 Email zl2ks@nzart.org.nz and a.allan@xtra.co.nz
Meeting Information: Committee fourth Thursday each month, General second Thursday each month and Social Group third Thursday.

23 Marton and Districts
Branch Callsign: ZL2AMS.
Physical Address: Marton CDHQ Rooms (back of Public Library Building), High Street, Marton.
Postal Address: PO Box 279, Marton 5460.
President: Brian Purdie ZL2ADL.
Secretary: Fred Rubery ZL2NR.
Net Information: Taihape 6775 repeater on Sundays at 2000.
Contact Person: Fred Rubery ZL2NR, 3 McDonald Place.
Contact Phone Number: (06) 327-7200 Email: fredrubery@xtra.co.nz
Meeting Information: Fourth Wednesday each month (check as winter meetings held bi-monthly) at 1930 at CDHQ High Street, Marton.
AREC: E Call ZL2EW, Section Leader Brian Purdie ZL2ADL (06) 329-3606 or 025 846-551,
Deputy Section Leader Jim Vernon ZL2BHX (06) 388-1855 or 025 462-628.

24 Motueka (Inc)
Branch Callsign: ZL2GK.
Physical Address: S.A.R. Rooms, High Street, Motueka Police Station.
Postal Address: PO Box 218, Motueka 7161.
President: J. Jackson ZL2BCG.
Secretary: N. B. Davenport ZL2LN.
Contact Person: Stephen Fogerty ZL2ASF.
Contact Phone Number:(03) 588-9366.
Meeting Information: First Monday each month.

25 Napier Amateur Radio Club (Inc)
Branch Callsign: ZL2GT.
Physical Address: 123 Latham Street, Marewa, Napier 4001.
Postal Address: 4 Tukes Place, Greenmeadows, Napier.
President: Laurie Winton ZL2TC.
Secretary: Randall Goldfinch ZL1NW.
Net Information: 3615 kHz and Napier 7250 on Sundays at 0900.
Contact Person: Laurie Winton ZL2TC.
Contact Phone Number: (06) 843-8519. Email: laurie@wilcom.co.nz
Meeting Information: First Wednesday each month at 1930 at Club Rooms (except January).

26 Nelson Amateur Radio Club
Branch Callsign: ZL2ARG.
Postal Address: PO Box 414, Nelson 7015.
President: Rob McMillan ZL2DO.
Secretary: Andrew Mackie ZL2HZ.
Net Information: Sundays 3890 kHz at 0900.
Contact Person: Dolph Lyford ZL2OL.
Contact Phone Number: (03) 548-6217.
Meeting Information: Third Wednesday (February to November) at 1930 in the Nelson Car Club rooms, Bolt Road, Tahunanui, Nelson.

27 New Plymouth Amateur Radio Club (Inc)
Branch Callsign: ZL2AB.
Physical Address: Taranaki Emergency Management Office, 45 Robe Street, New Plymouth.
Postal Address: C/- Taranaki Emergency Management Office, 45 Robe Street, New Plymouth.
President: Roy Symon ZL2KH.
Secretary: Greg Banks ZL2BZH.
Net Information: Wednesday at 2000 on 147.200 MHz repeater.
Contact Person: Greg Banks.
Contact Phone Number: (06) 751-3271
Meeting Information: Third Tuesday (February to November) second Tuesday in December.

28 Whangarei Amateur Radio Club (Inc)
Branch Callsign: ZL1AM.
Physical Address: Heritage Park, SH 14, Maunu, Whangarei.
Postal Address: PO Box 10-078, Te Mai, Whangarei.
President: Charlie Moates ZL1DAC.
Secretary: Trevor Gould ZL1KAG.
Net Information: VHF 146.650 MHz on Mondays at 2000. HF 3585 kHz on Sundays at 0800.
CW improvers 3580 kHz Tuesdays at 2000 (all times local).
Contact Person: Charlie Moates ZL1DAC.
Contact Phone Number: (09) 434-7292, Fax (09) 434-7206. Email: zl1dac@nzart.org.nz
Meeting Information: First Wednesday each month at 1930. Informal gatherings at the clubroom every Wednesday at 1700.

29 North Shore (Inc)
Branch Callsign: ZL1AB.
Physical Address: CD HQ, 400 East Coast Road, Mairangi Bay, North Shore.
Postal Address: CD HQ, 400 East Coast Road, Mairangi Bay, North Shore 1310.
President: Peter Smith ZL1ARB.
Secretary: Alan Wooller ZL1AUW.
Newsletter Editor: hfalkner@internet.co.nz
Net Information: 147.425 MHz on Wednesdays at 1930.
Contact Person: : Alan Wooller.
Contact Phone Number: (09) 444-2423.
Meeting Information: First Monday in the month (except June).
Web page: www.geocities.com/mjsheffield/northshore.html

30 Otago (Inc)
Branch Callsign: ZL4AA.
Physical Address: 109 Macandrew Road, Dunedin.
Postal Address: PO Box 5485, Moray Place Dunedin.
President: Lindsay Ross ZL4KS. Email: zl4ks@paradise.net.nz
Secretary: Ross Chapman ZL4RC. Email: zl4rc@slingshot.co.nz
Net Information: Dunedin 690 on Sundays at 1930 (except late December and early January).
Contact Person: Alan Gilchrist ZL4PZ.
Contact Phone Number: (03) 488-0608. Email: ham.radio@web4u.co.nz
Meeting Information: Each Wednesday (except late December and early January) at 1930.
Website www.qsl.net/zl4aa or link to www.nzart.org.nz

31 Pahiatua
In recess—refer to Branch 06.

32 Rahotu Coastal Inc Opunake Radio Club
Branch Callsign: ZL2ANN.
Physical Address: 166 Tasman Street.
Postal Address: 166 Tasman Street, Opunake 4854.
President: Peter McNeil ZL2BQW.
Secretary: J. N. Jago ZL2DBX.
Contact Person: H. Gorton ZL2ADU.
Contact Phone Number: (06) 761-7027.
Meeting Information: As required.

33 Rotorua Amateur Radio Club (Inc)
Branch Callsign: ZL1ROT.
Physical Address: Rotorua Arts Village, Wohlmann House, 1240 Hinemaru Street, Rotorua.
Postal Address: 27 Lucas Place, Fenton Park, Rotorua 3201.
President: Graham Beagley ZL1GTB.
Secretary: Graeme Bramwell ZL1GBB.
Net Information: 144.350 repeater on Fridays at 2030.
Contact Person: Graeme Bramwell ZL1GBB (07) 349-6617.
Email: zl1rot@nzart.org.nz
Meeting Information: Rotorua Arts Village, Wohlmann House first and third Tuesdays at 1930.

34 South Canterbury
Branch Callsign: ZL3UR.
Physical Address: CD HQ, Bank Street, Timaru.
Postal Address: C/- PO Box 261 Timaru.
President: H. G. Bouwknegt ZL3HGB, 35 Elizabeth Street, Cave.
Net Information: Timaru 695 on Sundays at 1930.
Contact Person: H. G. Bouwknegt.
Contact Phone Number: (03) 614-3977. Email: henk@xtra.co.nz
Meeting Information: Last Monday of each month (except December) at 1930.

35 South Otago
Branch Callsign: ZL4JF.
Physical Address: Main South Road.
Postal Address: "Graylea", RD 2, Balclutha 9200.
President: Ron Blair ZL4TL.
Secretary: Cliff Gray ZL4AS.
Net Information: 3585 kHz on Mondays at 2000. Kuriwao 675 on Mondays at 1930.
Contact Person: Cliff Gray. Email: zl4as@nzart.org.nz
Contact Phone Number: (03) 418-1488.
Meeting Information: First Tuesday each month (except January, May, July, Aug) at 2000.

36 South Westland
In recess.

37 Invercargill (Inc)
Branch Callsign: ZL4GQ.
Physical Address: 249 Ettrick Street, Invercargill.
Postal Address: PO Box 1260, Invercargill 9515.
President: Gavin Thompson.
Secretary: Judi Thompson ZL4TGC.
Contact Person: Crosbie Stewart ZL4TIC.
Contact Phone Number: (03) 216-3060.
Meeting Information: AREC First Tuesday of each month, (except January) 1930.
Branch second Tuesday of each month (except January), at 1930.
Computer second Tuesday of each month (except January), at 1930.

38 Taumarunui
Postal Address: C/- T. R. Hardisty, 293 Taupo Road, Taumarunui 2600.
President: L. Palmer.
Secretary: T. Hardisty.
Contact Person: Trevor Hardisty.
Contact Phone Number: (07) 895-7994.
Meeting Information: As required.

39 Tauranga Amateur Radio Club (Inc)
Branch Callsign: ZL1TP.
Physical Address: WBOP District Council Chambers, Barkes Corner, Tauranga.
Postal Address: C/- Emergency Management Office, Private Bag 12803 Tauranga.
President: Brian Heywood ZL1IE.
Secretary: Brian Heywood ZL1IE.
Net Information: 3600 kHz on Sundays at 0900. 438.850 MHz on Monday at 0900 and 1930. On Wednesdays 146.800 MHz at 2030.
Contact Person: Brian Heywood ZL1IE.
Contact Phone Number: (07) 543-3677. Email: zl1ie@nzart.org.nz
Meeting Information: Second Tuesday each month (except January) at 1900.

40 Te Awamutu Amateur Radio Club
Branch Callsign: ZL1CB.
Physical Address: 509/1 Mutu Street, Te Awamutu.
Postal Address: C/- PO Box 157, Te Awamutu 2400.
President: Bernard Westerbaan ZL1WT, 38 Whittaker Street, Kihikihi.
Secretary: Bindy Owen ZL2AZY, 550 Kane Street, Pirongia.
Net Information: 3865 kHz on Thursdays at 2000.
Contact Person: Bernard Westerbaan (07) 871-7039.
Email: ewenrp@xtra.co.nz or zl1wtc@paradise.net.nz
Meeting Information: Third Wednesday (every second month).

41 Thames
Branch Callsign: ZL1DF.
Physical address : 146 Maramarahi Road, RD 1, Thames.
Postal Address: 146 Maramarahi Road, RD 1, Thames.
President: Ken Hayhurst ZL1ATU.
Secretary: David Kitchen ZL1CDJ.
Net Information: 3850 kHz and 145.700 MHz on Sundays at 0900.
Contact Person: Ken Hayhurst ZL1ATU.
Contact Phone Number: (07) 868-7330. Email: k.hayhurst@xtra.co.nz
Meeting Information: Quarterly 2nd Tuesday (February, May, August and November) at Thames Civil Defence Rooms, Macky Street, Thames.

42 Titahi Bay Amateur Radio Club (Inc)
Branch Callsign: ZL2AFV.
Physical Address: Tireti Hall, corner Tireti Road and TePene Avenue, Titahi Bay.
Postal Address: PO Box 50-402, Porirua.
President: Ken Pattle ZL2TKY.
Secretary: Mike Burch ZL2AUA.
Net Information: 3710 kHz on Sundays at 2000.
Contact Person: Mike Burch ZL2AUA.
Contact Phone Number: (04) 233-9038 Email: zl2afv@hotmail.com.
Meeting Information: First Tuesday most months at 1930 (telephone contact to check).

43 Waihi and Districts
Branch Callsign: ZL1QW.
Physical Address: Williams Street, Waihi.
Postal Address: 32 Gilmour Street, Waihi 2981.
President: Peter Anderson ZL1LR.
Vice President: Ian McCaw ZL2BIU.
Secretary: Anne Anderson, ZL1AWA.
Net information: Thursday 1970 3620 khz.
Contact Person: Anne Anderson.
Contact Phone Number: (07) 863-7546. Email: zl1awa@paradise.net.nz
Meeting Information: First Wednesday each month (except January) at 1930. Ring Secretary for location.

44 Matamata Radio Club
Branch Callsign: ZL1RF.
Physical Address: Matamata homes.
Postal Address: 74 Tawari Street, Matamata 2271.
President: John Rasmussen ZL1AGA.
Secretary: Ian Perkins ZL1BFH.
Net Information: 3560kHz on Sundays at 0900.
Contact Person: John Rasmussen ZL1AGA.
Contact Phone Number: (07) 888-8059 (day), (07) 888-6269 (night).
Meeting Information: As required at members homes on the second Wednesday month at 1930.

45 Waimarino
In recess.

46 Wairarapa Amateur Radio Club (Inc)
Branch Callsign: ZL2OA.
Physical Address: Hood Aerodrome, Manaia Road, Masterton.
Postal Address: PO Box 860, Masterton 5900.
President: Robert Lambert ZL2BFY.
Secretary: Ian Stewart ZL2TIS.
Net Information: Masterton 680 on Mondays at 2000 except meeting nights and January.
Contact Person: Ian Stewart ZL2TIS.
Contact Phone Number: (06) 377-0713. Email: zl2tis@orcon.net.nz
Meeting Information: Second Monday each month (except January) at 1930.
Check info

47 Waitara Amateur Radio Club
Branch Callsign: ZL2TO.
Physical Address: Manukorihi Park Sports Club, Manukorihi Road, Waitara.
Postal Address: C/- L Smart 48 Leslie Street, Waitara 4656.
President: Ian Cash ZL2BRA.
Secretary: Larry Smart ZL2SM.
Contact Person: Larry Smart ZL2SM.
Contact Phone Number: (06) 754-7583. Email: zl2sm.smart@xtra.co.nz
Meeting Information: First Sunday each month (except January).
Where Statutory Holiday falls on a Monday meeting is deferred one week.

48 Wanganui Amateur Radio Society (Inc)
Branch Callsign: ZL2JA.
Physical Address: Deer Stalkers Hall, 100 Peat Street, Wanganui.
Postal Address: C/- 1 Caversham Road, Wanganui 5001.
President: Jim Allen ZL2KR.
Secretary: Jeff Howe ZL2THO.
Net Information: Each Tuesday 2000 on 146.900 MHz (Wanganui 690).
Contact Person: Jeff Howe ZL2THO.
Contact Phone Number: (06) 344-4302. Email: howejef@clear.net.nz
Meeting Information: First non-public holiday Monday each month (except January and July) at 1930.

49 Westland
Branch Callsign: ZL3GY.
Postal Address: 37 Chapel Street, Greymouth.
President: Bob McQuarrie ZL3TY.
Secretary: Graham Hay ZL3WMM.
Net Information: Westland 695 as contact for club members.
Contact Person: Graham Hay ZL3WMM.
Contact Phone Number: (03) 768-9499 Email: zl3wmm@nzart.org.nz
Meeting Information: First Wednesday each month (except January) at 1930. Meeting held at Electronet Services, Tainui Street Building, Greymouth.

50 Wellington Amateur Radio Club (Inc)
Branch Callsign: ZL2WB.
Physical Address: WEMO Building, corner Murphy and Turnbull Streets, Thorndon, Wellington.
Postal Address: PO Box 6464, Marion Square, Wellington 6035.
President: Mike Kerr ZL2BCW.
Secretary: John Barnhill ZL2TCN.
Net Information: 7050 kHz on Sundays at 0930.
Contact Person: Tony Fletcher ZL2ALJ.
Contact Phone Number: (04) 383-8838 and (04) 389-8547. Email: zl2alj@paradise.net.nz or zl2tcn@nzart.org.nz.
Meeting Information: Third Tuesday each month (except December) at 1930 (NZT).
Information on Quartz Hill ZL6QH and ZM2E/ZL2MF for VLF. Contact through WARC or direct through Bob Stewart ZL2AMI, see Website: zl6qh.com

51 Eastern Bay of Plenty (Inc)
Branch Callsign: ZL1AIU.
Physical Address: Waiewe Street, Hillcrest, Whakatane.
Postal Address: C/- D. M. Reid, 123 McCoy Road, RD 2 Opotiki 3092.
President: Murray Evans ZL1SZ.
Secretary: Donal Reid ZL1AIF.
Net Information: 147.300 MHz on Mondays at 1930.
Contact Person: Murray Evans.
Contact Phone Number: (07) 308-8409. Email: donal@wave.co.nz
Meeting Information: Second Wednesday each month (except January) at 1800—business at 1930.

52 Northern Hawkes Bay
In recess.

53 Te Puke Amateur Radio Club (Inc)
Branch Callsign: ZL1IB
Physical Address: C/-Te Puke Holiday Park, 2122 State Highway 2, Te Puke.
Postal Address: C/- S. J. Rowe, 223 State Highway 33, RD 9, Te Puke 3071.
President: Andrew Race ZL1TAP.
Secretary/Treasurer: Syd Rowe ZL1LWR.
Net Information: Tauranga 680 on Wednesdays at 2030. 3600 kHz at 0900 on Sundays.
438.855 Repeater at 0900 and 1930 on Tuesdays.
Contact Person: Syd Rowe ZL1LWR.
Contact Phone Number: (07) 533-1029.
Email: sydrowe45@hyper.net.nz
Meeting Information: Second Saturday each month at 1330. Clubrooms open each Saturday at 1300 for activities.

54 Patea
Branch Callsign: ZL2QF.
Postal Address: PO Box 156, Hawera 4800.
President: Robin Clarkson ZL2AFE.
Secretary: Graeme Bateman ZL2BHD.
Net Information: 705 on Sundays at 2000.
Contact Person: G. W. Bateman ZL2BHD.
Contact Phone Number: (06) 278-4793.
Meeting Information: Third Monday each month (except January) at 1945 usually at STDC Recreation Rooms, High Street extension, Hawera (check with secretary).

55 Waitomo Radio Club
Branch Callsign: ZL1IZ.
Physical Address: Thomson Avenue, Otorohanga.
Postal Address: C/- 3/49 Hinewai Street, Otorohanga 2564.
President: Andrew Leadey ZL4SQ.
Secretary: Ihian Howitt ZL1BZ.
Net Information: 3850 kHz on Mondays at 2000. Waitomo 7375 and or 7225 on Sundays at 0900.
Contact Person: Ihian Howitt ZL1BZ.
Contact Phone Number: (07) 873-7349. Email: ihian@paradise.net.nz
Meeting Information: First Tuesday of month at 1930 when held, but irregular due to scattered area of members, contact Secretary for details.

56 Christchurch West Amateur Radio Club (Inc)
Branch Callsign: ZL3VV.
Physical Address: Auburn Park, Upper Riccarton.
Postal Address: C/- PO Box 31-095, Ilam, Christchurch 8030.
President: Doug Pratt ZL2BCF.
Secretary: John Walker ZL3IB. Email: zl3ib@nzart.org.nz
Net Information: Each Sunday at 2000 on 147.250.
Contact Person: Des Borgfeldt ZL3ACS
Contact Phone Number: (03) 980-9705, Email borgfeldt@xtra.co.nz
Meeting Information: Fourth Tuesday each month (except December) at 1930. "Free n Easy" second Wednesday each month (except January) at 1330.

57 Tokoroa (Inc)
Branch Callsign: ZL1AQR.
Postal Address: PO Box 325, Tokoroa 2392.
President: E. C. Penwarden ZL1TDV.
Secretary: B. M. Williamson ZL1BYO.
Contact Person: B. M. Williamson.
Contact Phone Number: (07) 886-7675.
Meeting Information: Third Monday (bi-monthly).

58 Helensville
In recess.

59 Mangakino
In recess.

60 Taupo
Branch Callsign: ZL1BCO.
Physical Address: Hickling Park, A.C. Baths Avenue, Taupo.
Postal Address: C/- PO Box 58, Taupo 3351.
President: Richard Simmonds ZL1UTW.
Secretary: John Turnbull ZL1DT.
Net Information: Taupo 675 on Mondays at 2000.
Contact Person: Graeme Frederick ZL1BU.
Contact Phone Number: (07) 376-9544. Email: zl1bu@nzart.org.nz
Meeting Information: First Thursday each month at 1930.
Web site: www.reap.org.nz/~zl1bco

61 Central Otago
Branch Callsign: ZL4OO.
Physical Address: Alexandra Fire Station
Postal Address: C/- PO Box 7, Clyde, Central Otago.
President: John Lochhead ZL4QS.
Secretary: Ken Holdom ZL4HU.
Net information: 3660 kHz on Tuesday Nights at 2000 hours.
Contact Person: Ken Holdom.
Contact Phone Number: (03) 449-2579. Email: zl4hu@clear.net.nz
Meeting Information: Fourth Thursday each month (except June, July and December) at 2000 at Alexandra Fire Station. If not available then Town and Country Club.

62 Reefton-Buller
Branch Callsign: ZL3RBC.
Physical Address: 148 Torea Street, Granity, Buller.
Postal Address: 148 Torea Street, Granity, Buller.
President: Robert Duncan.
Secretary: Graham Hunter ZL2USB.
Contact Person: Graham Hunter. Email: purpleperson@xtra.co.nz.
Contact Phone Number: (03) 782-8055.
Meeting Information: Second Thursday each second month (beginning May).

63 Upper Hutt (Inc)
Branch Callsign: ZL2VH.
Physical Address: Rural Fire Station, Park Street, Upper Hutt.
Postal Address: C/- 204 Plateau Road, TeMarua, Upper Hutt.
President: Mark Gooding ZL2UFI.
Secretary: Mark Gooding ZL2UFI.
Net Information: 3630 kHz Tuesdays 2100.
Contact Person: Mark Gooding ZL2UFI.
Contact Phone Number: (04) 526-8446. Email: mark@foxtrot.co.nz
Meeting Information: Every Friday night at 1930.
IRLP node number 6910 on Climie 730.

64 North Otago
Physical Address: Civil Defense Headquarters, Severn Street, Oamaru.
Postal Address: Branch 64, 133 Reservoir Road, Oamaru 8901.
President: Daniel Moffat ZL4DBM.
Secretary: Denis Browne ZL4DB.
Contact Person: Doug Walker ZL4TDF.
Contact Phone Number: (03) 437-1262.
Email: browne.d.p@xtra.co.nz.
Meeting Information: Second Monday each month (except January) at 1930.

65 Papakura Radio Club (Inc)
Branch Callsign: ZL1VK
Physical Address: Wellington Park, 1R Great South Road, Papakura.
Postal Address: PO Box 72-397, Papakura 1730.
President: David Karrasch ZL1DK.
Secretary: Ian Ashley ZL1AOX.
Net Information: 147.325 MHz on Sundays at 0830 and 3755 kHz on Sundays at 0900.
Contact Person: David Karrasch.
Contact Phone Number: (09) 266-0180 or (09) 298-5271.
Email: prc@ihug.co.nz.
Meeting Information: General Meeting first Wednesday each month at 1930. Projects evening second Wednesday at 1930. Day meeting fourth Wednesday at 1330.
Morse Examination administrator: Dave Johnston. ZL1AMN (09) 298-9297.
Website: www.qsl.net/zl1vk

66 Auckland VHF Group (Inc)
Branch Callsign: ZL1BQ.
Physical Address: Arthur Faulkner Reserve, Hazel Avenue, Mount Roskill, Auckland.
Postal Address: PO Box 10-138, Dommion Road, Auckland 1030.
President: Tim Moore ZL1TN.
Secretary: Daniel Ayers ZL1DFA.
Net Information: 6625 and 9875 repeaters every Sunday at 2015.
Contact Person: Tim Moore ZL1TN.
Contact Phone Number: 021 273 2429. Email: tmoore@clear.net.nz
Meeting Information: Third Monday each month at 1930.
Website: www.qsl.net/zl1bq

67 Kawerau
Branch Callsign: ZL1KW.
Physical Address: Meetings held in members homes, confirm venue with Secretary.
Postal Address: C/- 34 Cobham Drive, Kawerau 3075.
President: Barry Liddle ZL1CAY.
Secretary: Bev Osborne ZL1OS.
Contact Person: Bob Krause ZL1TMK.
Contact Phone Number: (07) 323-8560.
Email: krause@quicksilver.net.nz
Meeting Information: Third Tuesday each month at 1930 (except December) confirm venue with secretary.

68 North Canterbury Amateur Radio Club (Inc)
Branch Callsign: ZL3RR.
Physical Address: Woodend Youth Centre, Woodend-Rangiora Road, Woodend.
Postal Address: PO Box 14, Woodend 8255, North Canterbury.
Branch Callsign: ZL3RR.
President: Tony Buckland ZL3HAM.
Secretary: Colin Rowe ZL3COL.
Net Information: 6975 repeater, following the 725 net. Approximately 2015 on Sundays.
Contact Person: Colin Rowe ZL3COL.
Contact Phone Number: (03) 313-2303. Email: colingr@xtra.co.nz
Meeting Information: Second Thursday of each month (except January) at 1930. AGM February.
Monthly Newsletter: *Ragchew*.

69 Kapiti Amateur Radio Society (Inc)
Branch Callsign: ZL2KB.
Physical Address: Corner Aorangi Road and Tutanekai Street, Paraparaumu.
Postal Address: C/- Bill Cox, 5A Konini Grove, Raumati Beach 6010.
President: Kevin Henderson ZL2DUS.
Secretary: Bill Cox ZL2BIL.
Net Information: Kapiti 146.85 MHz on Sundays at 1930.
Contact Person: Bill Cox.
Contact Phone Number:Home (04) 902-2630.
Email: billcat@paradise.net.nz
Meeting Information: First Wednesday each month 2000, Committee second Wednesday at 1930 and Clubrooms open every Saturday from 0930 until 1130. Make and mend evenings at clubrooms on the first and third Mondays of each month between 1930 and 2100.

70 Fielding Radio Club
Branch Callsign: ZL2AMR.
Contact Person: Paul Harris ZL2WOG.
Contact Phone Number: (06) 323-5524.

71 Rodney Amateur Radio Club (Inc)
Branch Callsign: ZL1ROD.
Physical Address: Warkworth Scout Hall, Shoesmith Street, Warkworth.
Postal Address: PO Box 587 Warkworth 1241.
President: Cec Tunnicliffe ZL2BCB.
Secretary: Jim Goodsir ZL1BJI.
Net Information: 147.730 MHz on Thursdays at 1930.
Contact Person: Jim Goodsir *Call Book* QTH.
Contact Phone Number: (09) 425-5944.
Contact Email: zl1bji@nzart.org.nz
Meeting Information: Second Tuesday each month (except January) at 1930 in Scout Hall.

72 Opotiki Amateur Radio Club (Inc)
Branch Callsign: ZL1BY.
Postal Address: C/- 138 Wellington Street, Opotiki 3092.
President: Jim Jones ZL1JRJ.
Secretary: Jack Lake ZL1ONE. Email: jlake@wave.co.nz
Contact Person: Steve Winder ZL1ACE.
Contact Phone Number: (07) 315-7333. Email: zl1ace@wave.co.nz
Meeting Information: Bi-monthly first Monday (March, May, July, September and November) at 1900 at the rear of St Stephens Church.

73 Northern Wairoa Electronics Club

74 Wellington VHF Group (Inc)
Branch Callsign: ZL2WA.
Physical Address: Tawa Civic Building, Cambridge Street, Tawa.
Postal Address: PO Box 12-259, Thorndon, Wellington.
President: John Andrews ZL2HD.
Secretary: Dick Greenbank ZL2TGQ.
Net Information: 710 repeater on Wednesdays at 2000.
Contact Person: Secretary.
Contact Phone Number: (04) 970-3985. Email: zl2wa@clear.net.nz
Meeting Information: Last Thursday each month (except December) at 1945.

75 Queenstown
In recess.

76 Kaikoura Radio Club
Postal Address: 42 Churchill Street, Kaikoura 8280.
President: H. G. H. Bryant ZL3GB.
Secretary: R. J. Godfrey ZL3DR.
Net Information: Kaikoura 690 on Saturdays at 1930.
Contact Person: Bill Jackson ZL3PZ.
Contact Phone Number: (03) 319-5981, Fax: (03) 319-7081.
Meeting Information: As required.

77 Te Aroha and Districts Radio Club
In recess.

78 Far North Districts Amateur Radio Club (Inc)
Branch Callsign: ZL1FND.
Physical Address: FNDARC, Queen Street, Awanui.
Postal Address: PO Box 4, Awanui 0552.
President: Bob Banks ZL1AUI.
Secretary: Russell Shackleton ZL1BQK.
Contact Person: Eric Manning ZL1GE.
Contact Phone Number: (09) 406-7059. Email: ericos@kol.co.nz
Meeting Information: As required.

79 Howick and Districts Radio Club (Inc)
Branch Callsign: ZL1TB.
Physical Address: Keall House 31 Uxbridge Road, Howick.
Postal Address: C/- 1/1 Castlemaine Close Howick, Auckland 1705.
President: Alan Scott ZL1AAS.
Secretary: Vern Morris ZL1TDG.
Net Information: 146.575 on Sundays at 0900.
Contact Person: Vern Morris ZL1TDG.
Contact Phone Number: (09) 271-1301. Email: zl1tdg@nzart.org.nz
Meeting Information: First Wednesday each month (except January) at 1930.

80 Hibiscus Coast Amateur Radio Club (Inc)
Branch Callsign: ZL1FU.
Physical Address: 479/1 Whangaparaoa Road, Whangaparaoa.
Postal Address: 479/1 Whangaparaoa Road, Whangaparaoa 1463.
President: David Wadham ZL1WD.
Secretary: John Bell ZL1FB.
Net Information: 3620 kHz on Sundays at 0800. 147.300 MHz repeater with Branch 71 Thursdays at 1930.
Contact Person: John Bell 34 Layton Road, Whangaparaoa 1463.
Contact Phone Number: (09) 424 5725.
Meeting Information: Third Wednesday each month (AGM in December) at 1930.

81 Waikato VHF Group (Inc)
Branch Callsign: ZL1IS.
Physical Address: C/- 64 Sunny Hills Avenue, Hamilton.
Postal Address: PO Box 606, Hamilton 2015.
President: Noel Rowe ZL3GR.
Secretary: Gavin Petrie ZL1GWP.
Net Information: Waikato 695 on Sundays at 2030.
Contact Person: Gavin Petrie ZL1GWP.
Contact Phone Number: (07) 843-0326. Email: zl1gwp@nzart.org.nz
Meeting Information: Last Sunday (February, May, August and November) at 1330, listen to net for details.
Web Site: www.zl1is.info

82 Southern Wairarapa Amateur Radio Club
Branch Callsign: ZL2SWR.
Physical Address: 2 Revans Street, Featherston.
President: Neil Rait ZL2BLM.
Secretary: Peter Norden ZL2SJ.
Contact Person: Neil Rait.
Contact Phone Number: (06) 308-9341.

83 Raglan Amateur Radio Club
Branch Callsign: ZL1CCT.
Physical Address: 25 Bay View Road, Raglan.
Postal Address: 25 Bay View Road, Raglan 2051.
President: Jack Sanders ZL1AUV.
Secretary: Fred Gilbert ZL1FG.
Net Information: Saturdays 3608 at 0830 (NZT).
Contact Person: Fred Gilbert Email: fred.g@paradise.net.nz
Contact Phone Number: (07) 825-8018.
Meetings: As required otherwise on air on Saturday mornings.

84 Bay of Islands Amateur Radio Club
Branch Callsign: ZL1BOI.
Physical Address: Rainbow Falls Road, RD 2, Kerikeri.
Postal Address: 61 Pungaere Road, RD 2, Kerikeri 0470.
President: D. J. Cottle ZL1HH.
Secretary: B. E. Wing ZL1AVW.
Net Information: 146.750 MHz on Wednesday at 1930.
Contact Person: ZL1HH or ZL1AVW.
Contact Phone Number: (09) 407-9086.

85 Mercury Bay (Inc)
Branch Callsign: ZL1MBB.
Postal Address: 10 Harbour Lights Terrace, RD 2 Whitianga 2856.
President: ZL1AMZ.
Secretary: ZL1CWN.
Contact Person: Brian ZL1CWN or Tom ZL1AMZ.
Contact Phone Number: (07) 866-2346. Email: zl1cwn@paradise.net.nz
Meeting Information: Second Wednesday each month at 1900.

86 Suburban Amateur Radio Club (Inc)
Branch Callsign: ZL1ZLD, ZL1ZLF.
Physical address: Musick Memorial Radio Station, 20 Musick Point Road, Bucklands Beach, Auckland.
President: Ian Walker ZL1BFB.
Secretary: Ann Walker ZL1TRH.
Contact Person: Ian Walker ZL1BFB.
Contact Phone Number: (09) 626-7188 or Mobile 0274 411-820.
Email: zl1bfb@nzart.org.nz
Meetings: Second Sunday each month 1300.
Club members are in attendance most Wednesday mornings from 10 am or by appointment.

87 South Taranaki (Inc)
President: Rob Clarkson ZL2AFE.
Postal address: PO Box 156, Hawera.
Secretary: Graeme Bateman ZL2BHD.
Net Information: 705 on Sundays 2000.
Contact Person: G. W. Bateman.
Contact Phone Number: (06) 278-4793. Email: gfbateman@clear.net.nz.
Meetings: Third Monday (except January) at 1945, usually at STDC Recreation Rooms, High Street extension, Hawera—(sometimes in members lounges, check with secretary).

Affiliated Branches

Canterbury Amateur Radio Development Society (Inc)
Branch Callsign: ZL3CAR.
Postal address: PO Box 21-188, Edgeware, Christchurch 8030.
President: Mike Barns ZL3TMB.
Secretary: Lorna Allan ZL3AAZ.
Contact Person: Lorna Allan ZL3AAZ.
Contact Phone Number: (03) 313-5352.
Email: lorna.allan@getrheel.co.nz
Meetings: Third Wednesday of each month (except January) 1930 at the Branch 56 Clubrooms, Auburn Park, Christchurch.

NEW ZEALAND AMATEUR RADIO STATIONS
ZL1 CALL-SIGNS

ZL1AA NZART AUCKLAND BRANCH INC, PO BOX 18-003, GLEN INNES, AUCKLAND
ZL1AAA GORDON, B D, 11 SIOTA CRES, KOHIMARAMA, AUCKLAND
ZL1AAB CARDY, D J, 28 CITY VIEW TCE, BIRKENHEAD, AUCKLAND 10
ZL1AAE YEARSLEY, J K, BOAT HARBOUR RD, RD 1, WHITIANGA
ZL1AAF WALKER, R L, 128 BUFFALO BEACH RD, WHITIANGA
ZL1AAH BACKHOUSE, R B, 17 DALE ROAD, KELLYS BAY, R.D. 1, TE KOPURU 0356
ZL1AAI DE JONG, J W, 28A RICHMAL STREET, WAIHI 2981, WAIKATO
ZL1AAJ WILLIAMS, H J, 30 HALBERG ST, GLENFIELD, AUCKLAND 1310
ZL1AAK STEPHENS, C H L, 56 KARAKA ST, TAKAPUNA
ZL1AAM SCOTT, P L, 25 CHATSWORTH CRES, PAKURANGA
ZL1AAN FALKNER, H T, 8 KAPAI ST, DEVONPORT
ZL1AAO STEEL, L B, 503 SEALEY ST, THAMES
ZL1AAP POPE, A A,
ZL1AAQ PALMER, W J, 27 THOMAS STREET, TIKIPUNGA, WHANGAREI 0101
ZL1AAR ROWE, R G, 32 MANAWA RD, REMUERA
ZL1AAS SCOTT, A, 25A RODNEY ST, HOWICK, AUCKLAND
ZL1AAU ELLEY, C B, UNIT 11, WAIHI HOSP RETIREMENT VILLAGE, VILLAGE WAY, WAIHI
ZL1AAX ANDREWS, G S, 352 A MAUNGATAPU ROAD, TAURANGA
ZL1AB NORTH SHORE BRANCH 29 NZART, C/- NORTH SHORE CIVIL DEFENCE HQ, 400 EAST COAST ROAD, NORTH SHORE CITY 1310
ZL1ABC BIDDLE, R R, C/O WESLEY COLLEGE, PO BOX 58, PUKEKOHE 1800
ZL1ABG GARLICK, B, 14/1 CAMBRIA STREET, NELSON
ZL1ABL DALE, A J, 61 RODNEY ST, WELLSFORD, AUCKLAND 1242
ZL1ABM HUMPHREY, M L G, 1009 TARARU RD, THAMES
ZL1ABN REAY, M J F, 16 PRISCILLA CRES, HAMILTON
ZL1ABP RUTTER, K L, 55 Ellis Avenue, Mt Roskill, AUCKLAND 1004
ZL1ABR WARD, B J, 44 CORDYLINE ROAD, RD 5 TUAKAU, PORT WAIKATO
ZL1ABS SHEFFIELD, M J, 176 ALBANY HIGHWAY, ALBANY, AUCKLAND
ZL1ABX DUKES, J R, 102 AWARUKU RD, TORBAY
ZL1ABZ JOHNSON, I, 15 MUIREND AVE, TOKOROA
ZL1AC WESTERN SUBURBS RADIO CLUB INC, PO BOX 15-122, NEW LYNN
ZL1ACD COAKLEY, A H, 1 CLINTON AVE, TE ATATU PENINSULA, AUCKLAND 1008
ZL1ACE WINDER, S P, 138 WELLINGTON ST, OPOTIKI
ZL1ACG CALDWELL, E G, 23 CLYMA PLACE, MASSEY, AUCKLAND 1008
ZL1ACH TEN VELDE, R J M, 8 MATIPO PLACE, TOKOROA
ZL1ACJ TURNER, R H, 7 KEISS STREET, BLENHEIM
ZL1ACK MARSHALL, R F, P O BOX 41172, ST LUKES, AUCKLAND
ZL1ACM MCKENZIE, C J, 20 Hinton Place, MANUREWA, AUCKLAND
ZL1ACN MESSENT, D L, 53 RUSSELL ROAD, HUNTLY
ZL1ACO GRUSNING, H N, 2 GORDON AVENUE, TE AROHA 2951
ZL1ACT MILLER, R N, 72 GRATTAN RD, TE AROHA
ZL1ACV TWISS, D G L, PO BOX 884, TAUPO
ZL1ACX ROUS, B W, 56 TAMAHERE DRIVE, GLENFIELD
ZL1ACY BILLING, C J, 16 DOBELL RD, STANMORE BAY, WHANGAPARAOA 1463
ZL1ACZ WILLIAMS, B C, M3 66 AVONLEIGH RD, GREEN BAY, AUCKLAND
ZL1AD BLACKETT, D J, 56 CHURCH ST, NORTHCOTE, AUCKLAND 9
ZL1ADA WRIGHT, J R, 28 CHORLEY AVENUE, MASSEY, AUCKLAND 1008
ZL1ADB ATAYA, P G E, 4204 GREAT NORTH RD, HENDERSON
ZL1ADC MEHARRY, R G, 111 CLARKIN RD, FAIRFIELD, HAMILTON
ZL1ADE DUFFY, E J, 22 DUKE ST, MT ROSKILL, AUCKLAND
ZL1ADG HUNT, C W, 990/1 BANK ST, TE AWAMUTU
ZL1ADI RADEMACHER, C A, 2247 SOUTH HEAD ROAD, RD 1, HELENSVILLE
ZL1ADL WILKINS, D N, 5 ETHEL ST, SANDRINGHAM
ZL1ADO SULLIVAN, J K, 26 Karaka Park Place, ST HELIERS, AUCKLAND 1005
ZL1ADP MEDLAND, F J, 11 THE LANE, MEDLANDS BAY, GREAT BARRIER ISLAND 1240
ZL1ADS TIBBLES, W J, 19 KOTANUI ST, ARMY BAY, WHANGAPARAOA
ZL1ADT ORR, K R, PO BOX 95-151, SWANSON, AUCKLAND 1230
ZL1ADW CLARK, B E, 88 LINCOLN PARK AVE, MASSEY
ZL1AE CROONEN, P W, 1071 HAZELMERE CRESCENT, TE AWAMUTU
ZL1AEL STANLEY, J W, PO BOX 525, WHANGAREI
ZL1AET TSE, A E, PO BOX 11-263, ELLERSLIE, AUCKLAND 1005
ZL1AF OGIER, I W, 32 RANGITANE ST, PALMERSTON NORTH
ZL1AFB OFFORD, J L, 43 QUEENS RD, NEW PLYMOUTH
ZL1AFD OSBORNE, R, PO BOX 2098, TAURANGA
ZL1AFE DE RENZY, P, PUKETUTU RD, RD 2, MATAMATA
ZL1AFF FLEMING, J, 43 BURNS ST, LEAMINGTON
ZL1AFM BELLAMY, P R, 36 ETON RD, HILLSBOROUGH
ZL1AFO ROGERS, GERALD, PO BOX 79, KAITAIA
ZL1AFQ ROSAN, D A R, PO BOX 65-147, MAIRANGI BAY, AUCKLAND 1330
ZL1AFS COWLEY, T C M, 850 BEACH RD, WAIAKE, AUCKLAND 10
ZL1AFT WALKER, K, 45 APOTU ROAD, R D 1, KAMO WHANGAREI
ZL1AFU MURPHY, R J, 19 LITTEN RD, HOWICK, AUCKLAND 1704
ZL1AFV BOYCE, A R, 26 SHAKESPEARE ST, CAMBRIDGE
ZL1AFX KILSBY, M R, 1/73 NEWHAVEN STREET, PIALBA, HERVEY BAY, QUEENSLAND 4655
ZL1AFY COLEMAN, P J, 2A KOHE ST, RIVERSIDE, WHANGAREI
ZL1AFZ MCLEAN, J P, GORGE RD, R D 3, PAHIATUA
ZL1AG GILES-PAIN, A K,
ZL1AGA RASMUSSEN, J W, 65 SMITH ST, MATAMATA
ZL1AGC PASSAU, K M, PO BOX 444, DRURY, AUCKLAND
ZL1AGG BYCROFT, P E, 253 SHIRLEY RD, PAPATOETOE, AUCKLAND
ZL1AGL DE GRUYTER, Y H, 98 MARAETAI DVE, MARAETAI, AUCKLAND
ZL1AGN CAMPBELL, M H, FENCOURT RD, RD 1, CAMBRIDGE
ZL1AGP HORWOOD, H, 233 KING ST, WHAKATANE
ZL1AGR COTTON, J K, VILLA 177 / ACACIA COVE, 127 WATTLE FARM ROAD, WATTLE DOWNS AUCKLAND 1702
ZL1AGS COLLINS, P E, 185 VICTORIA ST, CAMBRIDGE
ZL1AGT TAYLOR, E R, 18 THE CIRCLE, WHANGAPARAOA, AUCKLAND 1463
ZL1AGV DIXON, L N, 18 KORU ST, MANGERE BRIDGE
ZL1AGW MCDONALD, D F, MARGARET PLACE, RD 1, WHITIANGA
ZL1AGY EASTON, J A, RD 9, WHEKI VALLEY HILL, WHANGAREI
ZL1AGZ DELANEY, J D, 41 BIRDWOOD RD, SWANSON
ZL1AH WIGHTMAN, J D, 99C EIGHTH AVE, TAURANGA
ZL1AHD FRANKLIN, M J, 138 BARRETT ROAD, RD3, ALBANY, AUCKLAND
ZL1AHK TESTER, W, 48 PULHAM RD, WARKWORTH
ZL1AHL MCLELLAN, G L, P O Box 33, WANAKA
ZL1AHM BELL, A D, 182 OCEAN RD, OHOPE
ZL1AHO SYKES, R J, 263 SHIRLEY RD, PAPATOETOE, AUCKLAND 1701
ZL1AHP GREENDALE, L S, PO BOX 301, PAIHIA
ZL1AHT BUCKLAND, I D, 490 COATESVILLE HIGHWAY, R D 3, ALBANY 1331
ZL1AHW HOBAN, R P, 462 KAITEMAKO RD, WELCOME BAY RD 5, TAURANGA
ZL1AHX KING, A M, UNIT 2/106 VICTORIA ST, ONEHUNGA, AUCKLAND 6
ZL1AHZ KIDD, B F, 18 ADDISON RD, ONERAHI, PARUA BAY 0250
ZL1AI BADMAN, R G, 146 TOTARA DRIVE, PUKETE, HAMILTON 2001
ZL1AIA BAYLIS, M B, 1 MUNRO ST, ONERAHI, WHANGAREI
ZL1AIB MORRIS, N C, PO BOX 12357, HAMILTON
ZL1AIF REID, D M, 123 MCCOY RD, RD 2, OPOTIKI 3092
ZL1AIH MCCORMACK, R K F, 181 ARARIMU VALLEY RD, WAIMAUKU, AUCKLAND 1250
ZL1AII MCFARLANE, I R, 20 HAKARIMATA RD, NGARUAWAHIA
ZL1AIJ BLAKE, C B, 4 BLACKWELL DRIVE, R D 1 TRYPHENA, GREAT BARRIER ISLAND
ZL1AIK LEWIS, P J, 6 TYBURNIA AVENUE, MT ALBERT, AUCKLAND
ZL1AIP PARKER, T H, 11 A ALBERT STREET, PAEROA
ZL1AIR ARMSTRONG, B E, 24 BEACH RD, MANGONUI 0557
ZL1AIS DYER, R J, c/o 3 TUDOR RISE, WHAKATANE, BAY OF PLENTY
ZL1AIX ROBINSON, W J, 7 JOSEPH BANKS TCE, REMUERA, AUCKLAND 1005
ZL1AJ CULLOTY, H F J, 316/1 BUDDEN RD, POKURU RD 5, TE AWAMUTU
ZL1AJB BRADDOCK, A, PO BOX 57066, MANA, PORIRUA
ZL1AJD KRIPPNER, F J, TE RORE, RD 6, TE AWAMUTU
ZL1AJH Hobbs, A J, 3 York Place, Tokoroa
ZL1AJI JEFFRIES, A W, 70 WOODGLEN RD, GLEN EDEN
ZL1AJK WOOD, W B, 8 WILLIAM SOUTER ST, TAKAPUNA
ZL1AJL DEWAR, C A, 6 SYNTAX PLACE, CONIFER GROVE, TAKANINI
ZL1AJM MORGAN, J G, 26 HAROLD AVE, KAIKOHE
ZL1AJN HOLMES, W S, RD 1, WAIUKU
ZL1AJP POPE, A J,
ZL1AJQ HOGAN, A H, PO BOX 1497, TAUPO

ZL1AJR CHAPMAN, R, 39A WEST TAMAKI RD, GLEN INNES, AUCKLAND 1006
ZL1AJS BARKER, J A, 6 RIVERVALE GROVE, STANMORE BAY, WHANGAPAROA 1463
ZL1AJT JESSOP, G D, FLAT 1, 4 INKERMAN STREET, ONEHUNGA
ZL1AJU BARNARD, B F, 1/47 DUDLEY ROAD, MISSION BAY, AUCKLAND 1130
ZL1AJV IRVING, P J, 4 SCOTT AVE, MANGERE BRIDGE
ZL1AJW GILES, P M, 13 OZICH AVE, TE ATATU
ZL1AJX COX, J B, 4/95 WHETURANGI RD, GREENLANE, AUCKLAND 5
ZL1AJY BARRATT, M P, 6 BRUSSELLS PLACE, BIRKENHEAD
ZL1AK MITCHELL, B A, P O BOX 412, MATAMATA
ZL1AKB GILLARD, M L N, 22 STEWART ST, WHAKATANE
ZL1AKC CROOK, B W, P.O.BOX 1699, ROTORUA
ZL1AKI TAIT, C V, 46 MAYGROVE VILLAGE, 65 TAURANGA PLACE, OREWA
ZL1AKJ STUDHOLME, D L, 22 ANITA AVE, MT ROSKILL
ZL1AKL EAGLE, E H, 35 ARGYLL RD, TAURANGA
ZL1AKO OTTO, R H, RANGITANE, R D 1, KERIKERI
ZL1AKP POPE, K B,
ZL1AKS WIGLEY, J N, 43 OCEAN VIEW RD, NORTHCOTE
ZL1AKT FOLLETT, M S, 39 EDMOND RD, ROTORUA
ZL1AKV BELL, D C, 3 CUBA ST RD, WAIHI 3061
ZL1AKW HORNE, D W J, 3 VINE AVE, TAURANGA
ZL1AKX PASSAU, M B, 38 AWANUI RISE, RD2, PAPAKURA
ZL1AKY REED, G S, 510 GREAT SOUTH RD, PAPAKURA
ZL1AL BENTON, T J, C/O 5 WILTON STREET, WESTOWN, NEW PLYMOUTH
ZL1ALA HALDEN, J E, 154 OPUA RD, RD 2, NGATEA
ZL1ALC CHRISTENSEN, A L, 116 DONALD RD, KAITAIA
ZL1ALD SMITH, D W, 110 DOUGLAS ST, WHAKATANE
ZL1ALE JOHNSTON, A B, 2/29 MANSE RD, PAPAKURA, AUCKLAND
ZL1ALG OSBORNE, G J, 34 COBHAM DRIVE, KAWERAU
ZL1ALH LOCHMANN, I G, 19 HILLVIEW ST, NGARUAWAHIA
ZL1ALI LEE, A B, PO BOX 101 067, NORTH SHORE MAIL CENTRE, AUCKLAND 1330
ZL1ALK REED, C M, 510 GREAT SOUTH RD, PAPAKURA
ZL1ALN DUNCAN, K G, 2 MARSH AVE, MILFORD
ZL1ALQ DEVERICK, E I, PO BOX 33-1306, TAKAPUNA, AUCKLAND
ZL1ALR KAY, S R, PO BOX 28-176, REMUERA, AUCKLAND 1136
ZL1ALS SALANT, E L, 28A MC ARTHUR AVENUE, ST HELIERS, AUCKLAND
ZL1ALT ADAMS, N J, MATANGI RD, RD 4, HAMILTON
ZL1ALV USSHER, R R, 31A DEEPCREEK RD, BROWNS BAY, AUCKLAND 1310
ZL1ALX GUBB, G K, UNIT 4/278 SHIRLEY RD, PAPATOETOE, AUCKLAND 1701
ZL1ALZ BALSILLIE, A J, R D 1, POKENO
ZL1AM WHANGAREI AMATEUR RADIO CLUB, PO BOX 10-078, TE MAI, WHANGAREI
ZL1AMB BAIN, A M, RD 2, 58 GEORGE ST, PUKEKOHE
ZL1AMC ZWIES, O H, 19 HOFFMAN STREET, HOKITIKA
ZL1AME CROOK, F G, 17 HANLON CRES, DEVONPORT, AUCKLAND 1309
ZL1AMF GOSLING, K F, 131 ONERAHI ROAD, WHANGAREI, NORTHLAND
ZL1AMG MCGEE, A M, 97A BALMAIN ROAD, BIRKENHEAD, AUCKLAND 10
ZL1AMH HOLROYD, A, 417A KAMO RD, KAMO, WHANGAREI
ZL1AMI JAMIESON, R A, 11 PHILLIPS DRIVE, OROPI DOWNS, RD 3, TAURANGA
ZL1AMJ SAUNDERS, J R, 187 GILL ST, NEW PLYMOUTH
ZL1AMM MURPHY, R E, 14P CRADOCK STREET, AVONDALE, AUCKLAND 1007
ZL1AMN JOHNSTON, D A, 2/29 MANSE RD, PAPAKURA, AUCKLAND 1703
ZL1AMO WRIGHT, R W, 28 CHORLEY AVE, MASSEY
ZL1AMQ MALE, F G, 67 WAIPUNA RD, MT WELLINGTON
ZL1AMR LINDSAY, I M, 31 COTTESMORE PLACE, HUNTINGTON PARK, EAST TAMAKI, AUCKLAND 1706
ZL1AMT MOORE, D A, 2 KANUKA WAY, ALBANY, AUCKLAND 1311
ZL1AMW WALLACE, A J, 14 ACACIA PLACE, GLENVIEW, HAMILTON
ZL1AMY FLETCHER, I G, 248 EAST COAST RD, TAKAPUNA
ZL1AMZ GLENDENNING, T, 16 MEADOW DRIVE, WHITIANGA 2856
ZL1AN BOLD, G E J, 15 KAURI RD, BIRKENHEAD, AUCKLAND 1310
ZL1ANA BOLD, G T, 14 CHELSEA VIEW DRIVE, BIRKENHEAD, AUCKLAND
ZL1AND TURNER, A B, 7 ACMENA LANE, PAKURANGA
ZL1ANE GINGLES, J C, RD 3, TE MAIKA RD, WHANGAREI
ZL1ANF BEALE, W M, 12 EMERSON ST, TE AROHA
ZL1ANH HUNT, G K, 30 GRAND VUE RD, KAWAHA PT, ROTORUA
ZL1ANI BELL, K A, 62B EDEN TCE, KAMO
ZL1ANJ ELLIS, J M, 3 HAWERA RD, KOHIMARAMA
ZL1ANL SMITH, I G,
ZL1ANM BARNETT, N M, UNIT 4/92 CADNESS STREET, NORTHCOTE, AUCKLAND 1309
ZL1ANP PARSONS, N L, 509/1 MUTU ST, TE AWAMUTU
ZL1ANT PATTISON, B,
ZL1ANY PEARCE, S G, C/- ANAESTHETICS DEPARTMENT, WHANGAREI AREA HOSPITAL, WHANGAREI
ZL1AO ALLISON, J N, P O BOX 79365, ROYAL HEIGHTS
ZL1AOA WHITNEY, J R, 35B WALLIS ST, RAGLAN
ZL1AOB HARROP, G N, 8 WAINGARO RD, NGARUAWAHIA
ZL1AOC HENDERSON, H R T, 11 CHESLEY PLACE, BUCKLANDS BEACH
ZL1AOD BYRNES, C D, 31 ROSEHILL DRIVE, PAPAKURA
ZL1AOE GILLGREN, S J, 58 GRAHAM RD, GISBORNE
ZL1AOH STEWART, M I, T.H. 130 HILDA ROSS VILLAGE, 30 RUAKURA ROAD, HAMILTON
ZL1AOI TRETHOWEN, V G, 13 WOODVALE ROAD, GLEN EDEN, AUCKLAND 1007
ZL1AOM BROWN, M W, 290 DOUGLAS AVE, TE AWAMUTU
ZL1AOO HOLLEY, W, 16 ASHLYNNE RD, PAPATOETOE
ZL1AOT MARGISON, I, FLAT 2, 44 PEMBROKE CRESCENT, GLENDOWIE
ZL1AOV MATHESON, J L, MATA RD RD 1, KOHUKOHU
ZL1AOW FRANKHAM, D W, 3A KAURILANDS RD, TITIRANGI, AUCKLAND
ZL1AOX ASHLEY, I T, 894 PONGA ROAD, RD 4, PAPAKURA, AUCKLAND
ZL1AOZ MACKEY, W J, 87 ST STEPHENS AVENUE, PARNELL, AUCKLAND
ZL1AP DEN EXTER, J M G,
ZL1APD RICHARDSON, W J, 57 ESK ST, TAURANGA
ZL1APH DITTMER, C R, 1 HERBERT ST, TE AROHA
ZL1API HENDRIE, J G, MAKERUA RD, TOKOMARU 5450
ZL1APK TURVEY, G R, P O BOX 70, WHAKATANE
ZL1APM BOWERS, J, 20 STONELEIGH DRIVE, MAGNOLIA GROVE, HAMILTON
ZL1APP HAYSMITH, C A, 39 KATH HOPPER DRIVE, OREWA 1461
ZL1APQ CROOK, N W W G, 16-A SHERWOOD RD, ONERAHI, WHANGAREI
ZL1APS BROWNE, N H, 27 VIVIAN DRIVE, OMOKOROA 3051
ZL1APT JONES, E B, 13 CURSON STREET, ONEHUNGA, AUCKLAND
ZL1APU SOWERBY, B W, 42 CHERITON RD, HOWICK
ZL1APV FISHER, J R, 30 QUEEN MARY AVE, NEW LYNN, AUCKLAND 1007
ZL1AQ ROUSE, G C, 1 MEARS RD, HAMILTON
ZL1AQC SINCLAIR, V A, 37B BEATRICE AVE, HILLCREST, AUCKLAND
ZL1AQG BACICA, A, PO BOX 81, KAITAIA 0500
ZL1AQJ WRIGLEY, J S, 5 DERWENT ST, WESTERN SPRINGS, AUCKLAND
ZL1AQS SEXTON, J E, PAPARIMU, R D 3, PAPAKURA
ZL1AQU BOYER, C A, 311 PAKURANGA RD, PAKURANGA
ZL1AQV BARCLAY, S N, 28 LETTERKENNY PLACE, BLOCKHOUSE BAY, AUCKLAND 1007
ZL1AQX TOOMEY, A H, 39A MACLEANS RD, BUCKLANDS BEACH, AUCKLAND 1704
ZL1AQY KNAGGS, G R, 19 WARWICK PLACE, BROOKFIELD, TAURANGA
ZL1AR WALSH, J S, RD 1, MORRINSVILLE
ZL1ARB SMITH, P L, 56 HOBSONVILLE RD, WEST HARBOUR, AUCKLAND
ZL1ARD DUNCAN, L E, 14 COWLEY DRIVE, TEMPLE VIEW, HAMILTON
ZL1ARF WALLIS, BRIAN, FLAT 9, 3 BEDFORD STREET, PARNELL, AUCKLAND
ZL1ARG MILLER, R W K, MULLET POINT, R D 2, WARKWORTH
ZL1ARJ TWEED, R J,
ZL1ARK GENTRY, E A, P O BOX 1668, WHANGAREI 0115
ZL1ARL NENO, M R, 226 DICKSON RD, PAPAMOA
ZL1ARM MATTHEWS, J C H, 1 MAYFAIR CRES, MAIRANGI BAY
ZL1ARN BROWN, J T, 26B MAIN RD, RAGLAN
ZL1ARQ DUNHILL, I H, 19 GORING RD, SANDRINGHAM, AUCKLAND 1003
ZL1ARR ROBERTS, A R, 38 PEMBROKE DRIVE, BETHLEHEM, TAURANGA
ZL1ART ALLEN, A W, 106B MAXWELL ROAD, MARAMARUA, RD 1, POKENO 1872
ZL1ARV JONES, R, 59 RITCHIE RD, PARUA BAY, RD4, WHANGAREI
ZL1ARW FORSYTH, J T, 21 CHIPPING DALE, MANGERE BRIDGE, AUCKLAND 1701
ZL1ARX WRIGHT, P W J, 6 GRASSY DOWNS PLACE, HAMILTON
ZL1ARY CHANDLER, R W, 36 EASTERN BEACH RD, BUCKLANDS BEACH
ZL1ARZ GIBBS, F I, 22 FAIRVIEW PLACE, TE PUKE
ZL1AS LITTEN, R J, 400 ONEMANA DRIVE, R.D. 1, WHANGAMATA 2982
ZL1ASD BAYLEY, E, 11 TRIMMER TCE, PAPATOETOE
ZL1ASH BAYLEY, 3 MONIQUE PLACE, DINSDALE, HAMILTON
ZL1ASI MCRAE, E D, 4 NOTTINGHAM RD, WHANGAREI
ZL1ASJ SCOTT, A J, 2 BRIDGMAN STREET, TE AWAMUTU
ZL1ASK KLINAC, T J, 45 CENTRAL AVE, PAPATOETOE, AUCKLAND 1701
ZL1ASL RIMMER, K S, 47 PORRITT DRIVE, KAWERAU
ZL1ASN ADAMS, R E V, P O BOX 72-458, PAPAKURA, AUCKLAND

ZL1ASO GRAYSON, R I, 484 PINNACLE HILL ROAD, R D BOMBAY, AUCKLAND
ZL1ASP ABBOTT, R F, 62 BEACHWATER DRIVE, PAPAMOA
ZL1ASU LITTLE, D C, 25 MARELLEN DRIVE, RED BEACH, OREWA
ZL1ASV PHILLIPS, R L, 27-A SEAVIEW RD, MILFORD, AUCKLAND 1309
ZL1ASW WILLIAMS, A, 6 AWATEA GDNS, WIGRAM, CHRISTCHURCH
ZL1ASX MACCLEMENT, W D, P O BOX 108, GREENHITHE, AUCKLAND
ZL1ASY MCGAUGHEY, J D, TE WAHAPU, RUSSELL
ZL1ASZ ANDERSON, A N, 3 MCKENZIE RD, MANGERE
ZL1AT REDMOND, N P, PO BOX 874, INVERCARGILL
ZL1ATB LEITCH, D, 51 GARTON DRIVE, MASSEY WEST, AUCKLAND
ZL1ATC HAYMAN, S R, 68 KATH HOPPER DRIVE, OREWA, AUCKLAND 1461
ZL1ATE BABICH, A T, 20A MOTU PLACE, MT WELLINGTON, AUCKLAND 1006
ZL1ATI WARD, C J,
ZL1ATJ COWELL, R E, 53 MAXWELTON DRIVE, MAIRANGI BAY, AUCKLAND 1310
ZL1ATK MILLAR, T R C, 2 GARDEN COURT, WHANGAREI
ZL1ATL PARK, R J, 205 HAPE RD, THAMES
ZL1ATU HAYHURST, K W, 10 RICHMOND VILLAS, 82 RICHMOND STREET, THAMES
ZL1ATW MEENAGH, M B, 55 CAXTON PLACE, TE AWAMUTU
ZL1ATX VOGEL, H,
ZL1AU SCOUSE, P N, 17 CALLUNA CRES, TOTARA HEIGHTS, MANUKAU
ZL1AUA WILSON, B E, 10A JAEMONT AVE, TE ATATU SOUTH
ZL1AUB NICHOLSON, J E, 14 IRENE CRES, HAMILTON
ZL1AUE WALKER, J H, 5 KATH HOPPER DRIVE, OREWA, AUCKLAND 1461
ZL1AUG STREET, G H, 4 EMORY DRIVE, TAKANINI
ZL1AUH MURRAY, N V, TE TORO R D 4, WAIUKU, SOUTH AUCKLAND
ZL1AUI BANKS, R S, ARGYLE, 1214 ORURU ROAD, PERIA RD 2, KAITAIA
ZL1AUJ WARMAN, R W, 6 HOSPITAL RD, TE KOPURU
ZL1AUK HILL, M J, 30 B JEFFERSON PLACE, BROOKFIELD, TAURANGA
ZL1AUL LOIACONO, V, 85 WARNOCK STREET, WESTMERE, AUCKLAND 1002
ZL1AUM MADDOCK, C N, 75A METHUEN RD, AUCKLAND
ZL1AUR LINDOP, P R, CULLEN ROAD, WAIPU COVE, RD2 WAIPU
ZL1AUS INSLEY, J F, 1 D RIVERSIDE DRIVE, WHAKATANE
ZL1AUU WHITE, JOHN H S, RAINBOW POINT MOTEL, PO BOX 42, TAUPO 2730
ZL1AUV SANDERS, J G, 28 DENNY HULME DRIVE, BAY PARK, MT MAUNGANUI 3002
ZL1AUW WOOLLER, A M, 40 POWRIE ST, GLENFIELD
ZL1AUX GREAVES, G J, 40 WINDOMA CIRCLE, PAPATOETOE
ZL1AUY BURKINSHAW, D E, 19 WILLIAMS AVE, MORRINSVILLE 2251
ZL1AUZ HAWKINS, C R, 27 Lewis Street, Glenview, HAMILTON
ZL1AV TREMAYNE, D T, 147/149 SPENCER ROAD, LAKE TARAWERA, RD 5, ROTORUA
ZL1AVE ATCHINSON, D R, 109/A HILLSIDE RD, PAPATOETOE, AUCKLAND 1701
ZL1AVG JOHNSON, P R,
ZL1AVH ALDER, S H, 195 ST HELIERS BAY RD, ST HELIERS BAY
ZL1AVI KYLE, B V, 3/35 ALMORAH RD, EPSOM, AUCKLAND 1003
ZL1AVJ HARPER, M J, 34 TUATARA BLOCK, KAMO
ZL1AVL MANNING, A J, 17 FAIRMONT ST, NGARUAWAHIA
ZL1AVO ROBERTSON, K S, 2 JAEMONT AVE, TE ATATU
ZL1AVQ HAUTALA, H I, 3/240B ST HELIERS BAY RD, ST HELIERS, AUCKLAND 1005
ZL1AVR ROWE, J P, 100 TOTARA CLOSE, THAMES
ZL1AVU GARLICK, C W, P O BOX 72115, PAPAKURA, AUCKLAND
ZL1AVV MCFADYEN, E J, 39 KAHU ST, ROTORUA
ZL1AVW WING, B E, PUNGAERE RD, R D 2, KERIKERI
ZL1AVY TENNENT, D R, 1/151 FARQUHAR RD, GLENDENE, AUCKLAND 1008
ZL1AVZ RYALL, B J, 195 TE ATATU RD, TE ATATU SOUTH
ZL1AW WALKER, A N, CRANE RD, R D 1, KAMO
ZL1AWA ANDERSON, A W, 32 GILMOUR ST, WAIHI
ZL1AWD PARSONS, N J, 14 CREWE ST, GORE
ZL1AWE MCFADYEN, D,
ZL1AWF SEXTON, E A, PAPARIMU, R D 3, PAPAKURA 1730
ZL1AWL HOLLAND, A D, 66 OLD RAILWAY RD, R D 2, KUMEU 1250
ZL1AWP DENNISON, A S, 132 EVANS RD, PAPAMOA, MT MAUNGANUI
ZL1AWR GOODACRE, H W, 84 MORRINSVILLE ROAD, HILLCREST, HAMILTON
ZL1AWW WELFORD, G H, 8B WALPOLE AVE, HILLPARK, MANUREWA AUCKLAND 1702
ZL1AWX JILLINGS, M A, 71 HUTCHINSONS RD, HOWICK, AUCKLAND 1705
ZL1AWZ LEITCH, T G, 38 DAVID ST, MORRINSVILLE
ZL1AX STEVENS, K F, 49 VIVIAN ST, BURWOOD, CHRISTCHURCH
ZL1AXA BURGESS, G W, 34 BOORALEE AVE, HOWICK
ZL1AXB MURDOCH, P J, 183 GLENGARRY RD, GLEN EDEN
ZL1AXE SPACKMAN, M L, THE VICARAGE, 20 CHURCH ST, DEVONPORT
ZL1AXG WOODS, M H, 399 KARORI ROAD, KARORI, WELLINGTON 6005
ZL1AXI FOOTE, J R, PO BOX 4093, KAMO
ZL1AXN ANDERTON, T E, 87 WOOLFIELD RD, PAPATOETOE, AUCKLAND
ZL1AXS GRIFFIN, P J, 44 WAIMARIE RD, WHENUAPAI VILLAGE
ZL1AXT DE LUCA, B C, 20 GWILLIAM PLACE, FREEMANS BAY, AUCKLAND 1
ZL1AXU ORCHARD, M P, PO BOX 190, WHAKATANE
ZL1AXV RICHARDSON, K R, 4 REDCREST AVE, PAPAKURA
ZL1AXX SMITH, R I, 42 OAKFORD PARK CRESCENT, GREENHITHE, AUCKLAND 1311
ZL1AXY HJORRING, B G, 48 SMYTHE ROAD, HENDERSON, AUCKLAND
ZL1AXZ SAMPLE, K W, 71 BEATTIE ROAD, KAWERAU 3075
ZL1AY ALLEN, C W, 106B MAXWELL ROAD, MARAMARUA, RD 1, POKENO 1872
ZL1AYA D`ARCY, A E, FLAT 2 41 EAST COAST RD, MILFORD, AUCKLAND 1309
ZL1AYB BOWKETT, J A, PO BOX 17 281, KARORI, WELLINGTON 6033
ZL1AYC SHIPMAN, N J, 7 MENIN ROAD, RAUMATI BEACH 6010
ZL1AYE MIDWINTER, G E D, RD 10, OTAIKA VALLEY RD, WHANGAREI
ZL1AYH WALLACE, A D, C/O 1124B WAINUI ROAD, RD 2, OPOTIKI
ZL1AYM TENNANT, C H, 2/15 HUBER ST, WEYMOUTH, AUCKLAND 1702
ZL1AYN LOWE, R A, TUTAENUI RD, RD2, MARTON
ZL1AYQ MAINDONALD, J D, PO BOX 702, ROTORUA
ZL1AYT VALOIS, D A, 46 MCDOWELL CRES, BIRKENHEAD, AUCKLAND 1310
ZL1AYV DINGLEY, M J, 2139 GREAT NORTH RD, AVONDALE
ZL1AYW SPEEDY, S L, SWAN LAKE SUITE, 4A WINDERMERE, 6 THE PROMENADE, TAKAPUNA, AUCKLAND 1309
ZL1AYY CANDY, F A, LOWER ACCESS RD, RD1, KAEO 0471
ZL1AZ BROWN, M A, CMB 103, OWHANGO, VIA TAUMARUNUI
ZL1AZB YOUNG, R D, Po Box 1182, BLENHEIM
ZL1AZE MILLER, B D, 67 HORNSEY ROAD, MELROSE, WELLINGTON 6003
ZL1AZF POWELL, W L,
ZL1AZP BROOKE-ANDERSON, B, 2 GLENELG RD, RED BEACH, HIBISCUS COAST
ZL1AZT CLARE, I K, 31A TE KOAH PLACE, TAURANGA
ZL1AZU NELSON, B C, 59 PERCY ST, WARKWORTH
ZL1AZX ARMSTRONG, J B, RD1, OPOTIKI
ZL1AZZ DARRALL, P G, 8 PROSPECT PLACE, WESTERN HEIGHTS, HAMILTON
ZL1BA WITTING, E R, KEREHUNGA ROAD, RD 9, WHANGAREI
ZL1BAB COOPER, W G, 7 HARTFIELD RISE, PAPAKURA
ZL1BAC HILLIAR, S W, PO BOX 33-874, TAKAPUNA, AUCKLAND 1332
ZL1BAD KNOWLES, R E, RD 2, MAIN RD, TUAKAU
ZL1BAG MCLENNAN, E D, 8A WINDSOR RD, OTUMOETAI, TAURANGA
ZL1BAJ CANDY, B R, LOWER ACCESS ROAD, R D 1, KAEO 0471
ZL1BAK BURRAGE, G J,
ZL1BAM MILLIGAN, J W, 16 GRACE AVENUE, TE AROHA, HAMILTON
ZL1BAO MARTIN, H R, 26 DUNDEE PLACE, BLOCKHOUSE BAY
ZL1BAR MARTENSEN, J E, 34 LAWRENCE ST, HERNE BAY, AUCKLAND 1002
ZL1BAU BAKULICH, J V M, 7 MACKAYS CRESCENT, DARGAVILLE
ZL1BAV VIAL, S B, 57B SIMON ELLICE DRIVE, GLENFIELD, AUCKLAND 10
ZL1BAW COLEMAN, R E, 94 DARRAGHS ST, TAURANGA
ZL1BAY TARLTON, B M, PO BOX 81, KAITAIA
ZL1BAZ RICKARD, B A, 33 BAYLISS RD, RD 3, TE PUKE
ZL1BBB SHARMA, A, 11 SIOTA CRESCENT, KOHIMARAMA, AUCKLAND 1005
ZL1BBF FAITHFULL, B B, PO BOX 305, WHANGAPARAOA
ZL1BBH GREEN, A T, 98 ALBERT ST, HAMILTON 2001
ZL1BBK ALLAN, G D, PO BOX 35886, BROWNS BAY, AUCKLAND
ZL1BBP PEACE, K I, P O BOX 911-050, AUCKLAND MAIL CENTRE, AUCKLAND
ZL1BBQ MAXWELL, S G, 26 TUHAERE ST, ORAKEI
ZL1BBR CHAMBERLIN, P C, PO BOX 131, CLEVEDON
ZL1BBS KILPATRICK, G A, 157A LONG DRIVE, ST HELIERS
ZL1BBW WILLIAMS, K, RD 4, WHANGAREI
ZL1BBZ HOLT, R, 10 COLLINGWOOD RD, WAIUKU
ZL1BCA BATKIN, B W, 5B Tagalad Road, Mission Bay, Auckland
ZL1BCC CRANDALL, S, 189 KAHOREKAU ROAD, R D 7, TE AWAMUTU 2400
ZL1BCE ECKETT, J A B, 33-B THE CIRCLE, WHANGAPARAOA, AUCKLAND 1463

ZL1BCH

ZL1BCH DAVIS, B C, 5/34 RICHARD FARRELL AVENUE, REMUERA, AUCKLAND
ZL1BCI SINCLAIR, N S, 29 MEADOWLAND ST, TAURANGA
ZL1BCN MESSENT, A J, 53 RUSSELL ROAD, HUNTLY
ZL1BCO NZART TAUPO BRANCH, C/- P J AURISCH, PO BOX 58, TAUPO
ZL1BCV WHITE, J W, 50 OTAIKA RD, WOODHILL, WHANGAREI
ZL1BCW WEBBER, H C, 6 BRABANT ST, WHAKATANE
ZL1BD WILSON, A, WAINGARO RD, RD 1, NGARUAWAHIA
ZL1BDA WRIGHT, C C, 3 LIVINGSTONE ST, MILFORD
ZL1BDB TREVENA, M R, 1 TALGA COURT, TAKANINI
ZL1BDE VISSER, P, 4 KAURI CRES, MATAMATA
ZL1BDF PETHERICK, G R, 84 AROHA AVE, MORNINGSIDE
ZL1BDG MOGFORD, F L, 74 BUCHANAN ST, OPOTIKI
ZL1BDH LATHAM, G W, 5A HALBERG CRES, WHAKATANE
ZL1BDI DRAPER, N, 61 CHURCHILL RD, MURRAYS BAY
ZL1BDJ MONK, E C, 23 MATIPO AVE, ROTORUA
ZL1BDK PHILLIPS, K A, 15 SHANLEY CRES, WAIUKU, AUCKLAND
ZL1BDL MEESE, R R, 5 MEMORIAL DRIVE, RIVERSIDE, WHANGAREI
ZL1BDM HANSEN, A F, PO BOX 809, WHANGAREI
ZL1BDO MANCER, E S, 125 ASHLEY STREET, RANGIORA, CANTERBURY
ZL1BDP JAMES, J R, PO BOX 471, TAUPO
ZL1BDQ WILKINS, S J, 41 BADDLEYS BEACH RD, RD6, WARKWORTH 1241
ZL1BDS MCKAY, G N, 33 HALLADALE RD, PAPAKOWHAI, WELLINGTON
ZL1BDT NGAKURU, N H, 31 WIHONGI ST, KAIKOHE
ZL1BDW WEST, B D, 67 WOODLANDS RD, OPOTIKI
ZL1BDY SEAKINS, J M, 64 PARR TERRACE, MILFORD, AUCKLAND 1309
ZL1BDZ HOBAN, C J, KAITEMAKO RD, WELCOME BAY RD 5, TAURANGA
ZL1BE COLLINS, P, 14 PERCY ST, WARKWORTH, AUCKLAND 1241
ZL1BEB WILLIAMS, P, KAIHERE, RD, NGATEA
ZL1BEG BEGG, J W K, 27-A SHANAWAY RISE, NORTHCOTE, AUCKLAND 1309
ZL1BEJ MCCABE, B R, 130 TAKAHE RD, TITIRANGI
ZL1BEK MCTURK, P T R, 40 SILVERTON RD, WAIHI
ZL1BEL LEES, B, C/- 76 WINDMILL DRIVE, R D 2 SILVERDALE, HIBISCUS COAST AUCKLAND 1462
ZL1BEM LOCKWOOD, D C, 7 ADAMS ST, WAIHI
ZL1BEU JAMIESON, L I D, 1927 NGUNGURU RD, R D 3, WHANGAREI
ZL1BEX WILSON, A L G, 16 RAHIRI RD, MT EDEN
ZL1BEY SMART, J B, PO BOX 54, WELLSFORD 1242
ZL1BF STURMEY, N B L, 42 ALTON AVE, NORTHCOTE, AUCKLAND 1309
ZL1BFB WALKER, I D, P O BOX 163060, LYNFIELD, AUCKLAND
ZL1BFD POTTS, G C, 169 ALFRISTON RD, MANUREWA
ZL1BFE POTTS,
ZL1BFH PERKINS, I M, 74 TAWARI ST, MATAMATA 2271
ZL1BFK FRAKES, M C,
ZL1BFM ANDREWS, T I, 48B MANAIA ROAD, TAIRUA
ZL1BFN MATHEW, J C H, 21A FYFFE STREET, BLENHEIM
ZL1BFS BIRT, K D, 64 MOANA RD, OKITU, GISBORNE
ZL1BFZ ROBERTSON, D J, 29C YOUNGS RD, PAPAKURA
ZL1BG GRUMWALD, J B, TOKERAU BEACH, R D 3, KAITAIA
ZL1BGA MARTIN, G K, 26 DUNDEE PLACE, BLOCKHOUSE BAY
ZL1BGB GLOVER, D R, 5 WYMAN PLACE, PAKURANGA
ZL1BGE WHITWELL, G R, 3 GRACE ST, MATATA RD 4, WHAKATANE
ZL1BGH GEORGE, L H, 65 KING STREET, OPOTIKI
ZL1BGK GORDON, K, 117 CASHMERE AVE, KHANDALLAH, WELLINGTON
ZL1BGL ZAMMIT, P, 6B PRIMROSE STREET, RAGLAN
ZL1BGQ MCWILLIAMS, D J, 6 KALGAN PLACE, PAKURANGA, AUCKLAND
ZL1BGS EAST, T A, ROTONGARO RD, RD 2, HUNTLY
ZL1BGU FELT, B, Chongqing, Chongqing
ZL1BGV ROBERTS, M J, 19 CANAANDALE DRIVE, FLAGSTAFF, HAMILTON
ZL1BH HOLDEN, B J,
ZL1BHD WRIGHT, S W, 26 TAWA STREET, EDGECUMBE
ZL1BHE MATTHEWS, J F, 26 OCEANVIEW RD, NORTHCOTE
ZL1BHJ DEKKER, J, 11 WAIWHEROWHERO DRIVE, ST ANDREWS, HAMILTON
ZL1BHM MCKENZIE, B, 36 PEACH RD, GLENFIELD, AUCKLAND
ZL1BHQ POWELL, J F, 47 BECROFT DRIVE, FORREST HILL
ZL1BHU WATSON, A G, 204A VALLEY RD, MT MAUNGANUI
ZL1BHV DAVIS, W H, 55 PIHANGA ST, TAUPO
ZL1BHW PARKINSON, M A, 23C EASON ST, ROTORUA
ZL1BHX PARKINSON, 21 ARTHUR STREET, GLEN DALE, OAMARU 8901
ZL1BHY YOUNG, C R,
ZL1BIB HOOKHAM, C R, 304/21 FAIRVIEW AVE, ALBANY, NORTH SHORE CITY
ZL1BIC BYRNAND, J L, 5 TE ANAU PLACE, TIKIPUNGA, WHANGAREI
ZL1BID DAVIS, E T, 13 DUNDEE PLACE, BLOCKHOUSE BAY, AUCKLAND 7
ZL1BIG BIGGINS, A J, HOUSE 24, THE FALLS ESTATE, 94 BOUNDARY ROAD, TIKIPUNGA WHANGAREI
ZL1BIK MCKECHIE, K H, PO BOX 69051, GLENDENE, AUCKLAND 1230
ZL1BIL WEST, W J, APPLETON ROAD, RD 2, OPOTIKI 3092
ZL1BIP BINGHAM, L H, PO BOX 72, KATIKATI
ZL1BIQ PUFFETT, K H, 51 MCKEAN AVE, MANUREWA
ZL1BIV GARRETT, J W, 20 FIRST VIEW AVE, BEACHLANDS, AUCKLAND 1705
ZL1BIX SOPPET, D A, 4A RUARANGI RD, MT ALBERT, AUCKLAND
ZL1BIZ HENRY, E J, 27 MCRAE RD, MT WELLINGTON
ZL1BJ BREACH, J A, 74 OMOKOROA RD, TAURANGA
ZL1BJA HENDRIKSEN, R H E,
ZL1BJC ORCHARD, L J, PO BOX 190, WHAKATANE
ZL1BJE APPLEBY, W M, 8 BRIGHTSIDE RD, WHANGAPARAOA
ZL1BJF HENDERSON, A R, 322 ST HELIERS BAY RD, ST HELIERS
ZL1BJI GOODSIR, J W, 24 TE KAPA PLACE, SNELLS BEACH, WARKWORTH 1241
ZL1BJL WILLIAMS, C, RD 2, CAMBRIDGE
ZL1BJN SCHLEF, W K, 13 ROSLYN RD, MT WELLINGTON
ZL1BJO ORR, B, 1C ROSTREVOR AVENUE, EPSOM, AUCKLAND
ZL1BJP PARKINSON, D J, 2 UPLAND ST, BROOKFILED, TAURANGA
ZL1BJT TONG, B, 7 RIMU PLACE, OTANGAREI, WHANGAREI
ZL1BJU THOMPSON, N K,
ZL1BJZ FARMER, J B S, 88 NGAPUHI RD, REMUERA, AUCKLAND 1005
ZL1BK POMPE, H G A, 8 GLENMORE RD, PAKURANGA, AUCKLAND 1706
ZL1BKA MCINTOSH, G S, 4 ALEXANDER AVE, MARAETAI BEACH
ZL1BKD BUSCH, C T, PO BOX 372, WARKWORTH, AUCKLAND 1241
ZL1BKG WILSON, T G, 53 TIRIMOANA RD, TE ATATU
ZL1BKI SALMOND, A R, FLAT 2, 9 TOMINTOUL PLACE, HOWICK
ZL1BKJ SANDLANT, P W, 17 MAYFAIR CRES, MAIRANGI BAY, AUCKLAND 1311
ZL1BKM ENGEL, F W, PO BOX 6528, AUCKLAND
ZL1BKP SEARLE, K A, 9 KAHAROA AVENUE, OMOKOROA BEACH, WESTERN BAY OF PLENTY
ZL1BKQ ADAMS, C W, 90 BARBADOS DRIVE, UNSWORTH HEIGHTS, NORTH SHORE CITY 1309
ZL1BKU DAVIDSON, B J, 19 MAKAY ST, WAIHI
ZL1BKX RODGERS, A E, PO BOX 19-006, AVONDALE, AUCKLAND 1230
ZL1BKY RANKIN, A N, 90 HASTINGS RD, MAIRANGI BAY, AUCKLAND 1310
ZL1BKZ HENRY, R I, 27 MCRAE RD, MOUNT WELLINGTON
ZL1BL HUNTLY BRANCH 17 AMATEUR RADIO CLUB, ROTONGARO RD, RD 2, HUNTLY
ZL1BLB CHURCHER, B R, 80 HEPBURN RD, GLENDENE
ZL1BLC MORRIS, T M J, 10 SYLVANIA CRESCENT, LYNFIELD, AUCKLAND 1007
ZL1BLD WARD, M T, BOX 66, PAIHIA
ZL1BLE BEARD, G L, PO BOX 222, KAITAIA
ZL1BLI OCKLESTON, E W, B208 INVERLOCHY APTS, 20 NAPOLEON AVENUE, MILFORD, AUCKLAND 1309
ZL1BLQ SALMONS, R J, 2 TOWNHEAD CRES, TAURANGA
ZL1BLR FISH, L G, 476 PUNUI ROAD, TE AWAMUTU, WAIKATO
ZL1BLS SMITH, J B, 13 SELWYN AVE, TITIRANGI, AUCKLAND 7
ZL1BLT ALDERWICK, G B, 16 FOSTER CRES, BELMONT, LOWER HUTT
ZL1BLY GOODBRAND, J A, 4A BRAINTREE ST, KAMO, WHANGAREI
ZL1BLZ TUNNICLIFFE, G W, 17 Matau Rise, Te Atatu Peninsula, Auckland
ZL1BM MOLLOY, B L, 460 GREAT SOUTH RD, HUNTLY
ZL1BMA GREY, G R, 3 LOMOND PLACE, NAWTON, HAMILTON 2001
ZL1BMB MORONEY, P R, 26 OAKMOUNT PLACE, WATTLE DOWNS, MANUREWA AUCKLAND 1702
ZL1BMG SLONE, J, THORTON RD, RD 1, CAMBRIDGE
ZL1BMN LETHBRIDGE, B R, PO BOX 418, PAIHIA
ZL1BMP MACMILLAN, L P A, UNIT 4-15 GODDEN CRE, MISSION BAY, AUCKLAND 1005
ZL1BMQ LONG, A H, 40 MORNINGSIDE RD, WHANGAREI
ZL1BMS SIMMONDS, B M, 7 LORIMER LANE, HILLCREST, HAMILTON
ZL1BMW LOWRY, M R, LOWRY RD, BOMBAY
ZL1BMX GREENAWAY, W P, 8 STEWART PLACE, HAMILTON
ZL1BMZ PADGETT, A B, 5-A INAGH CLOSE, DANNAMORA, HOWICK AUCKLAND 1705
ZL1BN NORTHERN DX ASSOCIATION, 182 INGLETON ROAD, RD 2, WELLSFORD
ZL1BNA MARR, W R G, C/- NZMCA MAIL DROP SERVICE, PO BOX 72147, PAPAKURA AUCKLAND
ZL1BNB NEWMAN, M D, 30 NIKAU ST, WANGANUI
ZL1BND DOWLING, B N, 47 GRAY AVE, MANGERE EAST
ZL1BNG ORTON, N J, 32 ORCHARD RD, ENDERLEY, HAMILTON

ZL1BNI BRANT, P A, 41 REGENT ST, PAPATOETOE
ZL1BNJ PEDERSEN, W J, PO BOX 404, OPOTIKI
ZL1BNK PAINTING, F J, 26 GREENACRES DRIVE, KAWAKAWA
ZL1BNL SCHRICKEL, H J E, 8 MCPHERSON ST, REMUERA
ZL1BNM LARCOMBE, D C, 5 MCMILLAN PLACE, HOWICK, AUCKLAND
ZL1BNN CAZALET, R, 19 HALBERG ST, PAPAKURA, AUCKLAND 1703
ZL1BNO TWINAME, M H, FLAT 2, 4 BURT RD, MT WELLINGTON
ZL1BNP WERE, B J, 366C ROTOKAURI RD, RD 9, HAMILTON
ZL1BNQ GAMBLE, A A R, 19A CHIANIA PLACE, HOWICK, AUCKLAND 1705
ZL1BNV KEATINGE, A, 8 BARNARD STREET, MATAMATA
ZL1BNW COLLIN, J V, 65 PAINE ST, TAURANGA
ZL1BNY SHAKES, D B, 4 HERBERT STREET, TAKAPUNA, AUCKLAND
ZL1BNZ CLOUGH, D L W, 5 KELLY ST, ROTORUA
ZL1BOA WIGG, J D, 42 DEEP CREEK, RD TORBAY, AUCKLAND
ZL1BOE MUIR, C B, PO BOX 54-228, BUCKLANDS BEACH, AUCKLAND
ZL1BOF URQUHART, G A, 9 FOUR TREES, HOWICK
ZL1BOG DONNELLY, D R, 46 ELLISTON CRES, STANMORE BAY, WHANGAPARAOA
ZL1BOI BAY OF ISLANDS AMATEUR RADIO CLUB (INC), C/O MRS J COTTLE, RAINBOW FALLS RD RD 2, KERIKERI
ZL1BOK ROWNTREE, R J, PO BOX 163 086, LYNFIELD, AUCKLAND
ZL1BOM GLASGOW, M R, 11 BOWLER LANE, RD 6, TAURANGA
ZL1BON BONNINGTON, L M, 2 HIKUTAIA STREET, TE AROHA
ZL1BOP EMERY, N F, 10 CHARMAINE RD, TORBAY, AUCKLAND 1310
ZL1BOQ DUFFY, D B H, 327 WAIUKU RD PUNI, R D 3, PUKEKOHE 1800
ZL1BOS WILLIAMS, J B, KAINUI ROAD - 520, R D 1, TAUPIRI 2171
ZL1BPA CORIN, T G, PO BOX 11-018, ELLERSLIE, AUCKLAND 1131
ZL1BPB SMITH, R A, 37 KENSINGTON RD, WAIHI
ZL1BPC MARTIN, F B, 223 BELLEVUE RD, TAURANGA
ZL1BPE PERSEN, B W, 26 JARMAN ROAD, MT WELLINGTON, AUCKLAND
ZL1BPF WILCOX, H J, 64 TAYLOR RD, MANGERE BRIDGE
ZL1BPI RONKE, B R,
ZL1BPJ CHRISTENSEN, R A, JOHNSON STREET, ORMONDVILLE RD7, DANNEVIRKE
ZL1BPK JUNGE, A G, 128 STANLEY ST, TE AROHA
ZL1BPM BROWNE, L, 27 VIVIAN DRIVE, OMOKOROA
ZL1BPN JOHNSON, E A, 11 KOWHAI PARK RD, WHANGAREI
ZL1BPP WILKINS, D J H, 12 VALDESE RISE, BROWNS BAY
ZL1BPQ NETTLEINGHAM, F J, MATAHUI RD, RD 2, KATIKATI
ZL1BPU GREENMAN, M, 94 SIM RD KARAKA, R D 1, PAPAKURA 1730
ZL1BPV KELLY, D B, 17 ASHURST AVE, HAMILTON
ZL1BQ AUCKLAND VHF GROUP INC, PO BOX 40-525, Upper Hutt, Wellington
ZL1BQA DOELL, E D, 11 SANDSPIT RD, WAIUKU
ZL1BQC WOOLF, P H, 2 BOURBON TCE, KARORI, WELLINGTON
ZL1BQD RUNCIMAN, R J, 18 LANSELL DRIVE, HOWICK, AUCKLAND 1705
ZL1BQE DIX, K, 91 EAST TAMAKI RD, PAPATOETOE, AUCKLAND
ZL1BQF RYAN, L J,
ZL1BQI MILNE, A W, 27A BRAMLEY DRIVE, OMOKOROA
ZL1BQJ TETENBURG, C R, WARD RD, R D 2, ROTORUA
ZL1BQK SHACKLETON, R V, 8 RONGOPAI PLACE, KAITAIA
ZL1BQL ROBINSON, L K, PO BOX 253, WARKWORTH
ZL1BQO HYNDS, A G, PO BOX 534, TAURANGA
ZL1BQP BUCKTON, M D, 84 JOHN GILL ROAD, HOWICK, AUCKLAND 1730
ZL1BQW ARMSTRONG, C M, MCIVOR RD, RD 4, WHAKATANE
ZL1BQX CLARK, L C, 36A JUBILEE CRES, WHAKATANE
ZL1BQY CLAYTON, C J,
ZL1BRC ROSS, S J, 5 ROXY TCE, GLENDOWIE
ZL1BRE KRISTENSEN, P, KEENAN RD, RD 3, TAURANGA
ZL1BRG MACKEN, S A, PO BOX 65419, AUCKLAND
ZL1BRI CRAWFORD, W, 42 FOREST LAKE RD, HAMILTON
ZL1BRJ JONES, R, P O BOX 39403, HOWICK, AUCKLAND
ZL1BRL CORNWALL, P J, 10 PARK AVE, NORTHCOTE
ZL1BRN NORGATE, M H, 692 Whareora Road, R D 5, Whangarei
ZL1BRO BRENNER, B N, PO BOX 33-112, TAKAPUNA
ZL1BRS SUTHERLAND, S D, 4 CARDIGAN STREET, MIDDLEMARCH, OTAGO
ZL1BRV GARDINER, P R, 3 NYSSA PLACE, TOTARA HEIGHTS, MANUREWA
ZL1BRW BOGHURST, A D, 70 OSTEND RD, OSTEND
ZL1BRX BAIN, E M, RD 2, 58 GEORGE CRES, BUCKLAND, PUKEKOHE
ZL1BRY ANDERSON, H C, 37 ARKLES STRAND, WHANGAPAROA, AUCKLAND 1463
ZL1BRZ HILL, B, 12A POWHIRE AVENUE, KENSINGTON, WHANGAREI
ZL1BS SCOTT, D T S, P O BOX 566, WHANGAPARAOA, AUCKLAND
ZL1BSA RODGERS, A H, 22 GOLDERS PLACE, TAUPO
ZL1BSC FITZPATRICK, D J, 238 Valley Road, KAWERAU
ZL1BSG PEARCE, T K L, 23 AUREA AVE, PAKURANGA
ZL1BSN WALLINGFORD, N, 55 WATLING ST, TAURANGA
ZL1BSS HAWKER, A R, 94 HARRINGTON RD, HENDERSON
ZL1BSW WINGER, B S, PO BOX 1532, WHANGAREI
ZL1BT CHALLIS, D J, 4 OLIVER TWIST AVE, HOWICK, AUCKLAND 1705
ZL1BTA RODGERS, S J, 19 CRADOCK ST, AVONDALE
ZL1BTB PINFOLD, M A, 28 MCKENZIE RD, OWHATA, ROTORUA
ZL1BTF ROGERS, LESLEY, GILL ROAD, R D 3, KAITAIA
ZL1BTI MORONEY, R J, 495 SEAVIEW RD, ONETANGI, WAIHEKE ISLAND 1081
ZL1BTK PARKINSON, R J, 70 VANDELEUR AVE, BIRKDALE
ZL1BTL ROWE, N G, PO BOX 161, CLEVEDON, MANUKAU
ZL1BTP TUBBY, E L, 470 PAPAMOA BEACH RD, PAPAMOA BEACH
ZL1BTT MACKAY, COLIN, 84 FRANCIS STREET, TAKAPUNA, AUCKLAND 1309
ZL1BTU ORANGE, L R, PO BOX 40-262, GLENFIELD, AUCKLAND 1310
ZL1BTX VAN DER MEULEN, F P, 20 WALTER ST, TAKAPUNA
ZL1BTY MAINDONALD, D C, 123B DOMINION ROAD, MT EDEN, AUCKLAND
ZL1BTZ DAWE, L J, 6 LINWOOD AVE, FORREST HILL, AUCKLAND 10
ZL1BU FREDERICK, G I, 96 LAKEWOOD DRIVE, TAUPO 2730
ZL1BUI WILLIS, R P, PO BOX 3102, ONERAHI, WHANGAREI
ZL1BUJ MACKEY, C J, R D 1, KAMO, WHANGAREI
ZL1BUK DUSKE, J S, 11 PENDENE PLACE, FORREST HILL
ZL1BUL HOLMES, N E, 4 BAMBURY CLOSE, PT CHEVALIER, AUCKLAND 1002
ZL1BUP JOHNSON, F T J, 49 YOUNGS RD, PAPAKURA
ZL1BUQ HAIGH, W H, 12 KAURI LOOP RD, ORATIA, AUCKLAND 7
ZL1BUS O'BRIEN, T N, WISEMANS RD, RD, WAITOA
ZL1BUT EGGLETON, P W, PO BOX 109, RUSSELL 0255
ZL1BUU LEVIN, P C, RD 2, TAUPIRI
ZL1BUY FINN, W J, 30 ATTWOOD STREET, R D 4, WHANGAREI
ZL1BUZ PONT, A, 8 LACHLAN AVE, ARATAKI, MT MAUNGANUI
ZL1BVA CULLEN, J K, 71 PATERSON STREET, MOUNT MAUNGANUI
ZL1BVB YUEN, S T, 7 DALLAS PLACE, AVONDALE
ZL1BVK LEARMOND, A H, 14 TAKAPU ST, HENDERSON
ZL1BVN VAN DER HULST, P W, MATANGI RD, RD 4, HAMILTON
ZL1BVO MESSENGER, G E, 104 ELIZABETH ST, TAUPO
ZL1BVT SLEGH, J P,
ZL1BVV BOYLAN, R P, 1 CERAMCO PLACE, TORBAY, AUCKLAND 10
ZL1BW WOLTERSDORF, W G E, SUITE 5, ACCADIA ON THE AVENUES, 101 EDGECUMBE ROAD, TAURANGA
ZL1BWC COMBER, J P, 21 CASTOR PLACE, SUNNYBROOK, ROTORUA
ZL1BWD DOBBS, L, 32 AMBLESIDE DRIVE, CUMBRIS DOWNS, HOWICK AUCKLAND 1705
ZL1BWG SCAHILL, B G, 5 TAHUNA PLACE, ONERAHI
ZL1BWH SHELDON, B R, 16 CARTER ST, MT MAUNGANUI
ZL1BWI ROSE, A, 34 LYNDHURST RD, TE ATATU SOUTH
ZL1BWK MCCONNOCHIE, B D, 8 FARMER ST, TE AROHA
ZL1BWP HORN, B R, 5 MONIQUE PLACE, HAMILTON
ZL1BWQ LE CORNU, E M O, KIWITAHI, RD 1, MORRINSVILLE 2251
ZL1BWS SCHUTZ, W F H, PO BOX 386, OPOTIKI
ZL1BWV THOMPSON, G M, PUNGAERE RD, PDC, WAIPAPA 0470
ZL1BXA BUXTON, H C, 32 CASTLETON ST, BIRKDALE
ZL1BXD VENCATACHELLUM, V, 47 AYTON DRIVE, GLENFIELD, AUCKLAND 10
ZL1BXF YOUNG, M B, 44 TOROA ST, TORBAY
ZL1BXK HERROLD, N G, RD 1, HALL RD, WAIUKU
ZL1BXM MIERS, E R, OMAHANUI, R D 1, DARGAVILLE
ZL1BXP WALSH, A R, KEREONE, RD 1, MORRINSVILLE
ZL1BXS MILLER, P G, RD 1, RUSSELL
ZL1BXT JAMES, C H, 1037 HEAPHY TCE, HAMILTON
ZL1BXU DAVIS, L H, 8 MURITAI ST, TAUPO
ZL1BXX YOUNG, B M J, 4 SOPHORA PLACE, TOTARA HEIGHTS, AUCKLAND 1702
ZL1BXY LISTERMAN, B P, 25 VIRGO PLACE, GLEN EDEN, AUCKLAND
ZL1BY OPOTIKI AMATEUR RADIO CLUB, NZART BRANCH 72, C/O PO BOX 383, OPOTIKI 3092
ZL1BYA MARTINSON, L, 31 RIVERSIDE DRIVE, WAIUKU 1852
ZL1BYC CORNISH, G M, 19 LEVLEY LANE, KATIKATI
ZL1BYD EMMETT, G J, 9 JOHN LISTER CLOSE, HOWICK 1705, AUCKLAND
ZL1BYE THOMAS, R S, 52 LYNMORE AVE, ROTORUA
ZL1BYF WERDER, K J, SPRINGDALE, RURAL DELIVERY, WAITOA
ZL1BYG MOREY, E J, 301 FAIRVIEW RD, TE AWAMUTU
ZL1BYI RAMSAY, I S, 8 LOCKE AVE, HILLSBOROUGH
ZL1BYL ALLOWAY, F R, 311 BARACLOUGH RD, WHANGAMATA
ZL1BYO WILLIAMSON, B M, 158 ELIZABETH DRIVE, TOKOROA
ZL1BYP KENNEDY, A G, 116 WADE RIVER RD, ARKLES BAY, WHANGAPARAOA
ZL1BYQ ASHMORE, R W, 47 SHELLY BEACH RD, OSTEND, WAIHEKE ISLAND
ZL1BYW ALLAN, R W, RD1, OTIRIA ROAD, KAWAKAWA

ZL1BYY

ZL1BYY CARTWRIGHT, G T, 7 RAINES AVENUE, FORREST HILL, AUCKLAND 1309
ZL1BYZ SHAW, J N, C/O POST OFFICE, PAERATA
ZL1BZ HOWITT, I M, 3/49 HINEWAI STREET, OTOROHANGA
ZL1BZA BARNETT, Z, 152 EDEN AVE, TE AWAMUTU
ZL1BZC MURCH, D E, 51 FOSTER AVE, HUIA, AUCKLAND
ZL1BZF NESFIELD, J C, 12 JUBAEA PLACE, HENDERSON 1008
ZL1BZL ELLIS, D G R, 14-B GRANT ST, KAMO, WHANGAREI
ZL1BZT CAWTE, P L,
ZL1BZW RODGER, T R R, 126 PYES PA ROAD, TAURANGA
ZL1BZZ HOLMBERG, R E, RD 5, TAURANGA
ZL1CA TREBES, C E, VILLA 18, OCEAN SHORES VILLAGE, 80 MARANUI STREET, MT MAUNGANUI
ZL1CAB WHITTAKER, D J, 108A COMRIES ROAD, CHARTWELL, HAMILTON
ZL1CAC HARSANT, N G, 105 CORONATION RD, HILLCREST, AUCKLAND 9
ZL1CAD FRANCIS, S D, PO BOX 9313, NEWMARKET, AUCKLAND
ZL1CAF FRANCIS, M E, P O BOX 75530, MANUREWA, AUCKLAND

ZL1CAH MEYER, B F M, BARRETT RD, RD 10, HAMILTON
ZL1CAK MILLER, R N, 106 CHADWICK RD, GREERTON, TAURANGA

ZL1CAL BADMAN, N A, C/- SIMPLY SOUVENIERS, 11 MARAMA ARCADE, TAUPO
ZL1CAM MCKAIN, C A, 8 EXETER ST, MT MAUNGANUI
ZL1CAQ GREGORY, J H, 29 RUAWAI RD, MT WELLINGTON
ZL1CAS GATES, N L, 542 WHANGAPARAOA RD, WHANGAPARAOA, AUCKLAND
ZL1CAT NEWLAND, P J, MIDDLETON RD, RD 3, PAPAKURA
ZL1CAU EARNSHAW, M B, PO BOX 100862, NTH SHORE MAIL CENTRE, AUCKLAND 1330.
ZL1CAV VAN KUILENBURG, P A, 45 FARRELLY AVE, MT ROSKILL
ZL1CAX LAIRD, A G, EAST COAST RD, MAHIA, NUHAKA 4192
ZL1CAY LIDDLE, B D, 3 HINEMOTU AVE, KAWERAU
ZL1CB NZART TE AWAMUTU BRANCH 40, C/- B WESTERBAAN ZLIWT, 38 WHITAKER STREET, KIHIKIHI 2430
ZL1CBA DE RIDDER, L J, PO BOX 246, KERIKERI
ZL1CBD WILSON, I A, 28 BUTLER RD, KERIKERI
ZL1CBE WRIGHT, W A, R D 1, AWANUI
ZL1CBI GUILFORD, L I, FLAT 2/35 PROSPECT TCE, MILFORD, AUCKLAND
ZL1CBQ CONTESSE, L, PO BOX 7085, TIKIPUNGA
ZL1CCA CUMBERLEGE, A C, 26 KNIGHTSBRIDGE DRIVE, FORREST HILL, AUCKLAND 1310
ZL1CCD CUMIN, M H, PO BOX 334 082, SUNNYNOOK, AUCKLAND 1330
ZL1CCG NEIL, H P, 203 PARAWAI ROAD, THAMES
ZL1CCI ANDERSON, J C, 6 WAITAKI BRIDGE PARK, 6 R.D.H., OAMARU
ZL1CCJ GOODENOUGH, A R, 754 EAST COAST RD, BROWNS BAY

ZL1CCN PEARCE, P B, 3 SHANKILL PLACE, DANNEMORA, AUCKLAND
ZL1CCP DAVIS, T A, 224 KIRKWOOD ST, THAMES
ZL1CCT NZART RAGLAN BRANCH 83 INC, C/O 25 BAYVIEW RD, RAGLAN
ZL1CCV PURVES, P S, 15 YOUNG ST, HAMILTON
ZL1CD BRADNAM, R J, 58 FANCOURT ST, MEADOWBANK, AUCKLAND 1005
ZL1CDE BRICKLAND, R L, 52 ASCOT PLACE, TE AWAMUTU
ZL1CDF UREN, P E, 4 FRASER ST, HUNTLY
ZL1CDJ KITCHEN, D H, 146 MARAMARAHI RD, RD 1, THAMES
ZL1CDM ROBERTS, D F, 2/162A KING ST, WHAKATANE
ZL1CDO CRAIG, DAVID, 4 MARGARET PLACE, MELVILLE, HAMILTON
ZL1CDP PARNELL, CHRIS, 10 COLENSO PLACE, MISSION BAY, AUCKLAND
ZL1CDQ POWELL, G W, 394 BELK RD, RD 1, TAURANGA
ZL1CDT WILSON, S M, KIRIKOPUNI RD, R D 2, WHANGAREI
ZL1CDW KEEL, K P, 5 HICKFORD PLACE, OKATO, TARANAKI 4652
ZL1CDX FIELDING, T, 26 ROOSEVELT RD, ROTORUA
ZL1CDY WALKER, R G, AO MARAMA PLACE, RD1, KERIKERI
ZL1CE WILSON, G R S, 164 LADIES MILE, ELLERSLIE, AUCKLAND 1005
ZL1CED LEE, J, 54 LAGOON DRIVE, PANMURE, AUCKLAND 1006
ZL1CEG GATES, A, 542 WHANGAPARAOA RD, WHANGAPARAOA, AUCKLAND 1463
ZL1CEJ FRANCIS, W D, P O BOX 75530, MANUREWA, AUCKLAND

ZL1CFV VEITCH, CHARLES, P O BOX 57, WAIPAWA
ZL1CG Cheyne, Gavin Alexander,
ZL1CGB SMITH, B J, 19 FIELDSTONE COURT, HOWICK, AUCKLAND
ZL1CH BOYD, H A, FAIRVIEW VILLAGE, 325/21 FAIRVIEW AVENUE, ALBANY, AUCKLAND
ZL1CHM GILLEN, S M, 24A RIDGEWOOD CRESCENT, BIRKENHEAD, AUCKLAND 1310
ZL1CI MEYER, T R, 9 HARDY PLACE, COOKS BEACH, RD 1, WHITIANGA
ZL1CIM GILLETT, S J,
ZL1CJ SMITH, B W, KIMIHIA RD, RD 1, HUNTLY

ZL1CK MARTIN, E T, 330 MAIN ROAD, R D 1, TOTARA, THAMES
ZL1CKK KELLERMANN, C, PO BOX 274, WAIUKU, SOUTH AUCKLAND
ZL1CKM BAUMGARTNER, A E, PO BOX 3501, RICHMOND 7031
ZL1CLF LANDMAN, A H, 22 NGAHERE STREET, INGLEWOOD
ZL1CLG CALDWELL, J, 44 UXBRIDGE RD, HOWICK, AUCKLAND
ZL1CM PRINCE, R P, 425 LUND ROAD, R D 2, KATIKATI 3063
ZL1CMA ELLWOOD, R, 152 MANGANESE PT ROAD, R D 4, WHANGAREI
ZL1CMB BARNETT, C M, 11 Olive Street, Papatoetoe, AUCKLAND
ZL1CMC CHRISTENSEN, C M, C/O 116 DONALD RD, KAITAIA
ZL1CMG Gray Catherine, 52 Waimapu Street, Greerton, Tauranga
ZL1CMK MORRISON, C M K,
ZL1CMR ROWLANDS, C M, 6 MONTAGUE PLACE, ONERAHI, WHANGAREI
ZL1CN WOODFIELD, M K, 182 INGLETON ROAD, RD 2, WELLSFORD
ZL1CNB BRADFIELD, C N, 18B KITEWAO STREET, NORTHCOTE, AUCKLAND 1309
ZL1COB COBUSSEN, D G, PO BOX 29047 GREENWOODS CNR, EPSOM, AUCKLAND 1003
ZL1COD SHEARER, J M, 57 STANLEY ST, TAUPO 2730
ZL1COM JAMES, A B, PO BOX 100028, NORTH SHORE MAIL CENTRE, AUCKLAND
ZL1COP BRILL, A J, Private Bag 92002, AUCKLAND
ZL1COR TRENKNER, T L, 72 LILLIS LANE, COROMANDEL
ZL1COX HOTSON, ANN, 40 PETRIE ST, WESTBROOK, ROTORUA
ZL1CP CLARKE, R W, KAIMAUMAU RD, RD1, AWANUI 0552
ZL1CPL WILTSHIRE, N L, 42 ATHENREE RD, RD 1, KATIKATI
ZL1CPS SHORT, N J, P O BOX 3000, TAUPO
ZL1CPZ ROBERTS, R W, 103 FAIRY SPRINGS ROAD, ROTORUA
ZL1CQ DALRYMPLE, M B,
ZL1CR NGAKURU, R A, PO BOX 278, KAIKOHE
ZL1CRB BAGRIE, R, 1 YORK ST, DRURY, AUCKLAND 1750
ZL1CRM MOUNTFORT, C R,
ZL1CS SHAW, Craig, 1897-38-67 Takehara, Nakano-shi, Nagano-ken
ZL1CSC CLAYTON, C S, 6 SPINNAKER DRIVE, TE ATATU PENINSULA, AUCKLAND 1008
ZL1CSF FOO, C S, 1-68 ALICIA ROAD, MEADOWLANDS, HOWICK, AUCKLAND 1705
ZL1CT TRAN, C, THE COTTAGE,, ORINOCO VALLEY, RD1, MOTUEKA
ZL1CTC CURTIS, R A, 11 KEITHA PLACE, GLENVIEW, HAMILTON 2001
ZL1CTI BOWMAN, M S, 10 PURIRI ST, TAKAPUNA, AUCKLAND 9
ZL1CTR CARY, T R, P O BOX 92, GREENHITHE, AUCKLAND 1330
ZL1CUC HOBSON, J, 20 HOBSONVILLE RD, MASSEY, AUCKLAND 8

ZL1CUT ALEXANDER, C J, 49 RICHARD FARRELL AVE, REMUERA
ZL1CV FIRMAN, R J, 19 TAINUI ST, ONERAHI
ZL1CVD DAY, C V, 30 Killen Road,, RD2 KATIKATI 3063, BAY OF PLENTY
ZL1CVK WAHRLICH, R M, WHANGAMARINO RD, RD 2, TE KAUWHATA
ZL1CW HARGRAVES, J E, 7 OSTEND RD, OSTEND, WAIHEKE ISLAND 1240
ZL1CWD CROMARTY, N C, 20 RAUTARA ST, ORAKEI, AUCKLAND 1005
ZL1CWK HAGAN, G, 919 WAINGARO RD, RD 2, NGARUAWAHIA
ZL1CX SYKORA, P, P O BOX 302 346, North Harbour, AUCKLAND

ZL1CY WEBSTER, D M, 46 SPEIGHT RD, KOHIMARAMA
ZL1CYK STANSFIELD, D, PO BOX 15-038, TAURANGA
ZL1CYM WILLIAMS, T O, 1/37 TITOKI STREET, TE ATAT PENINSULA, AUCKLAND
ZL1CZ DUXBURY, T A, 3/57 MARGAN AVE, NEW LYNN, AUCKLAND 7
ZL1DA DAVIS, D S, 6 BROOKE TCE, CAMBRIDGE
ZL1DAA BEAUMONT, G S, 70 WHAU VALLEY ROAD, WHANGAREI
ZL1DAB WILLIAMS, G H, DRAFFIN RD, R D 9, WHANGAREI
ZL1DAC MOATES, C M G, PO BOX 102, MAUNGATAPERE
ZL1DAD SWIFT, G N, 8 AWHIRANGI PROMENADE, SWANSON, AUCKLAND
ZL1DAI EYRE, Edward, 5 Brunton Place, Glenfield, North Shore
ZL1DAJ COTTLE, J N, RAINBOW FALLS RD, R D 2, KERIKERI
ZL1DAS WERLBERGER, B, MIRANDA ROAD, R D 1, POKENO 1872

ZL1DAW WAKEFIELD, I C, 11 TUNUI PLACE, WHAKATANE
ZL1DAY DEWAR, D B, PO BOX 683, GISBORNE
ZL1DB ST CLAIR, P R, PO BOX 14-195, PANMURE, AUCKLAND 1006
ZL1DBI SHELDON, R L, 16 CARTER ST, MT MAUNGANUI
ZL1DBL RALSTON, W B, 168 CAMBRIDGE RD, TAURANGA
ZL1DBM RALSTON, 111 OLD PARUA BAY ROAD, RD 5, WHANGAREI
ZL1DC RIETZ, B A, PO BOX 82, TE AROHA 2971
ZL1DCW WEATHERLEY, D C, 70 GEORGE POINT ROAD, ONERAHI 101, WHANGAREI
ZL1DD KIRKWOOD, B J, 66 CORY RD, WAIHEKE ISLAND 1240
ZL1DDL GUENTHER, U, 27A TEMPLE ST, MEADOWBANK, AUCKLAND 1005

ZL1DE ADSHEAD, G O, 35 TREVOLA ST, AVONDALE
ZL1DEE ELLIS, D E,
ZL1DEL WROE, R D, 28 HANER DRIVE , URANGAN, HERVEY BAY, QUEENSLAND 4655
ZL1DES RENNER, D M, 118 TE HAUMI DRIVE, PAIHIA
ZL1DF THAMES BRANCH NZ ART INC, 503 SEALEY ST, THAMES

ZL1DFA AYERS, D F, PO BOX 1756, SHORTLAND ST, AUCKLAND
ZL1DG GOODHEW, A D, 2369 CAMBRIDGE RD, TE AWAMUTU
ZL1DGK KING, D G, PO BOX 126, HAMILTON
ZL1DH EDWARDS, J R, 2 MOTUORA AVE, MANLY, WHANGAPARAOA 1463
ZL1DI LOGAN, J D, 17A QUONA AVE, HILLSBOROUGH, AUCKLAND 1004
ZL1DIY ECKHOFF, C, PO BOX 5, RUSSELL
ZL1DJB BLOOMFIELD, D J, 191 KAURI RD, WHENUAPAI, AUCKLAND 1250
ZL1DJH HARWOOD, D, 5 ALOMA WAY, DEANWELL, HAMILTON
ZL1DJS SILVESTER, D J, 237 WOODSIDE ROAD, COOPERS CREEK, OXFORD
ZL1DJT TAYLOR, D J, 142 WELCOME BAY RD, TAURANGA
ZL1DK KARRASCH, D F, 24 BROOKE RD, PAPAKURA, AUCKLAND

ZL1DKM MACARTNEY, D K, 6 ART LANE, PUTARURU
ZL1DKW DUREY, K, 13 WILDING AVE, NORTHCOTE, AUCKLAND
ZL1DLA LUDWIG, D, MOUNT TIGER GARDENS, RD 1 ONERAHI, WHANGAREI
ZL1DLC CULLOTY, D L, C/O 37 RAWHITI TCE, KELBURN, WELLINGTON
ZL1DM GRAYSON, R T, 25 REMBRANDT PLACE, PAPAKURA
ZL1DMA MCCLUGGAGE, D, P O BOX 615, WHANGAREI
ZL1DMB BOSHIER, D M, 140 GLOUCESTER RD, MT MAUNGANUI
ZL1DN EVANS, D G, 31 MATIPO STREET, PUKETE, HAMILTON
ZL1DOF FLETCHER, D O, R D 2, KAIKOHE
ZL1DOT PATTISON, B I, 1/16 Matipo Place, Hora Hora, WHANGAREI

ZL1DP PAUL, R E, PO BOX 33-415, TAKAPUNA, AUCKLAND 1332

ZL1DR BROOKER, A S, 1023 MAUNGAKAWA RD, RD 4, CAMBRIDGE
ZL1DRS SHORT, D R, PO BOX 10-227, TE RAPA, HAMILTON
ZL1DRT TYNDALL, D R, PO BOX 222, KAITAIA 0500
ZL1DS STRONG, D J, PO BOX 184, WARKWORTH
ZL1DSP PICKLES, D S, PO BOX 124, CLEVEDON 1750
ZL1DST TAPP, D, 19 KAURIMU RISE, TITIRANGI, AUCKLAND
ZL1DT TURNBULL, JOHN, 1206 RIVER ROAD, RD 1, REPOROA
ZL1DTE EWEN, D T, 29 BRAIGH RD, WAIPU 0254
ZL1DTM MCGEE, D, 97 BALMAIN RD, BIRKENHEAD, AUCKLAND
ZL1DV VEALE, R S, 31 RANGITOTO AVE, REMUERA
ZL1DW WALPOLE, D B, RD 5, TUAKAU, AUCKLAND 1892
ZL1DWB BLOOM, D W, MATAPOURI RD, TUTUKAKA, R D 3, WHANGAREI
ZL1DX DAVIES, R G, 31 MEARS ROAD, ST ANDREWS, HAMIILTON

ZL1DYC HEYER, H L, BREWSTER RD R D 1, TUAKAU, AUCKLAND 1892
ZL1DZ CAMPBELL, Q D, 22 HALL CRESCENT, TAUMARUNUI
ZL1FA GREENAWAY, A W, 14 LINDOCH AVE, TE PUNA RD 2, TAURANGA
ZL1FB BELL, J F G, 34 LAYTON RD, WHANGAPARAOA, AUCKLAND
ZL1FC BROTT, R O, RD 2, CHURCH RD, KAITAIA
ZL1FD ARMSTRONG, D K, KAITUNA RD, RD 9, TE PUKE
ZL1FF Buckeridge, T, 409 Awatea St, Akina, Hastings
ZL1FG GILBERT, W S, 25 BAY VIEW RD, RAGLAN
ZL1FH Hudson, R F, 670 Grey St, Claudlands, Hamilton
ZL1FI POWER, W T, 24 KOKIRI STREET, ROTORUA
ZL1FJ SMITH, B, 81 HATEPE AVE, TAUHARA, TAUPO
ZL1FK CHALLINOR, M J, 15B HARRYBROOK RD, GREEN BAY, AUCKLAND 1007
ZL1FL WATERHOUSE, D C, 2 MOANA TCE, MARAETAI, AUCKLAND 1705
ZL1FM LITTLEWOOD, B R, 34 MASON AVE, PUKEKOHE
ZL1FMA MAY, Frank, 44/B Mount View Drive, ROTORUA
ZL1FN KEESING, S,
ZL1FND FAR NORTH DISTRICT AMATEUR RADIO CLUB, PO BOX 4, AWANUI 0552
ZL1FO BRENNAN, C F,
ZL1FOX SINCLAIR, S C, PO BOX 45, ROLLESTON, CANTERBURY
ZL1FP RUMBLE, O W, 48 PAREWAITAI COURT, PAPAMOA 3003
ZL1FR NIXON, J R, 363 QUEEN ST, AUCKLAND CENTRAL
ZL1FRO WISEMAN, A R, 57/A PARK ESTATE ROAD, PAPAKURA, AUCKLAND
ZL1FS MILLER, S P,
ZL1FT RIESTERER, L W, APOTU ROAD, KAURI, R D 1, KAMO
ZL1FTL LEWIS, F T, 16C STANNERS ROAD, RD 2, KERIKERI
ZL1FU HIBISCUS COAST AMATEUR RADIO CLUB INC, 479/1 WHANGAPARAOA RD, WHANGAPARAOA 1463
ZL1FV RUNCIMAN, G J, 18 LANSELL DRIVE, PARKLANDS, HOWICK AUCKLAND 1705
ZL1FW ROWE, M J,
ZL1FX HYDE, K G, 126B TE ATATU RD, TE ATATU SOUTH
ZL1FY ARMSTRONG, G W, MCIVOR RD, RD 4, WHAKATANE
ZL1FZ COATES, K J, 2 BARDIA ST, TAKAPUNA
ZL1GAD DAWICK, G A, 76 OKETE ROAD, TEUKU R D 1, RAGLAN
ZL1GAR RODGERS, A G, 16/41 BELL STREET, BELL GLEN, TAURANGA
ZL1GB POWELL, D B, 6A UDY STREET, PETONE, LOWER HUTT
ZL1GBB BRAMWELL, G B, 27 LUCAS PLACE, FENTON PARK, ROTORUA
ZL1GBJ JACOBI, B R, 8 BENELLA ST, TOKOROA
ZL1GC CRAIG, G H, 12 EXPLORATION WAY, WHITBY
ZL1GD HIGHET, R J, 6-A BROOKFIELD RD, TE ATATU PENINSULA, AUCKLAND 1008
ZL1GDH HENLEY, G D, 4 CARSON ST, TOKOROA
ZL1GE MANNING, E, LAKE NGATU, R D 1, AWANUI 0552
ZL1GEK BADCOCK, R F W, P O BOX 302-620, NORTH HARBOUR, AUCKLAND 1330
ZL1GEO MILLER, G A, 49 TE AWA LANE, RD 3, HAMILTON
ZL1GF FISH, J F, 14 HOWARD RD, NORTHCOTE
ZL1GG VAN ZANDT, G, PO BOX 330, MANGONUI
ZL1GH HAY, G R,
ZL1GI PRICE, P G, 67 ST ANDREWS DRIVE, BETHLEHEM, TAURANGA
ZL1GIB BAREA, H, 179 DOUGLAS AVE, TE AWAMUTU 2400
ZL1GIR ROBSON, I G, 13 SUTTON ROAD, DRURY, AUCKLAND 1750
ZL1GK SHERRARD, GRAEME, 21 CORCORAN ROAD, TE PAHU R.D.5, HAMILTON
ZL1GKO OLIVER, G K, 28 HOUCHENS ROAD, GLENVIEW, HAMILTON
ZL1GL KELLY, T D, 3/133 KOHIMARAMA ROAD, KOHIMARAMA, AUCKLAND 1005
ZL1GM GLADDING, M, 209 BALLIE STREET, THAMES 2801
ZL1GMW WRIGHT, G M, 19 VINA PLACE, MASSEY, AUCKLAND
ZL1GMZ MATHEW, GEORGE,
ZL1GN BECKHAM, D S R, 27 FIFTH AVE, MT ALBERT, AUCKLAND 3
ZL1GO SEKO, A, 204 BLEAKHOUSE RD, HOWICK, AUCKLAND 1705
ZL1GOT TUNNICLIFFE, G O L, REDWOOD MASONIC VILLAGE, TE NGAE ROAD, ROTORUA
ZL1GP HENDERSON, R J, 87 GRANGE RD, MT EDEN
ZL1GPS SHAW, P J, 49 MOUNT VIEW RD, HAMILTON
ZL1GQ HARDWICK, D B, 368/4 GLUE POT ROAD, OROPI, RD 3, TAURANGA
ZL1GRG GREY, G R, 284 KENNEDY RD, ONEKAWA, NAPIER 4001
ZL1GS SHACKLETON, E G, PO BOX 22, KAITAIA
ZL1GSG STORZ, G, 12 HARBUTT AVE, MT ALBERT, AUCKLAND 1003
ZL1GSM MANNING, G S,
ZL1GSN NISBET, G S, 21 WILLIAMS AVE, KAIKOHE
ZL1GSP PURVIS, G S, 2 NELSON ST, PAPAKURA, AUCKLAND 1703

ZL1GTB BEAGLEY, G T, 24 BLOMFIELD ST, ROTORUA 3201
ZL1GU ROLFE, E M, 9 TAIT ST, KAMO, WHANGAREI
ZL1GVP POINTON, G V, 3/8 WAHANUI ROAD, ONE TREE HILL, AUCKLAND
ZL1GW DUFFELL, A H, 16 HYDE AVE, DINSDALE, HAMILTON
ZL1GWE DUFFELL, 57 CRESCENT ROAD EAST, PALM BEACH, WAIHEKE ISLAND 1240
ZL1GWP PETRIE, G W, 64 SUNNYHILLS AVE, GLENVIEW, HAMILTON 2030
ZL1GYM MUZYKA, G Y, 33 VERMONT ST, PONSONBY, AUCKLAND
ZL1GZ GRAHAM, E W, 18 SEAWAY TCE, TAURANGA
ZL1HA THOMPSON, R J, 29B HIGHGROVE LANE, GLENFIELD, AUCKLAND 1309
ZL1HAH HUNGATE, H A, PO BOX 25026, TOWN BASIN, WHANGAREI
ZL1HAM HAM, L J S, 58B FERGUSSON ST, TOKOROA
ZL1HAU HAU, A T, 10 ROBIN HOOD PLACE, ONERAHI, WHANGAREI
ZL1HB HOLTZ, H R, 60 LANDING DRIVE, ALBANY, AUCKLAND 1331
ZL1HC SCHOEMAN, S J O, 43 TURAKINA STREET, NEW PLYMOUTH
ZL1HE AHMU, H E, 388 ROSCOMMON RD, MANUREWA, SOUTH AUCKLAND 1702
ZL1HF BAKER, G C, 101 HINEWA RD, TAURANGA
ZL1HH COTTLE, D J, RAINBOW FALLS ROAD, R D 2, KERIKERI
ZL1HI WILLIS, M W, HARPOON HILL, R D 1, GREAT BARRIER ISLAND
ZL1HIT RENTOUL, B J, 2/24 PRINCE REGENT DRIVE, BUCKLANDS BEACH, AUCKLAND
ZL1HJ GANNON, M, 9 LIVERPOOL ST, TE KUITI
ZL1HK SOUTH AUCKLAND REPEATER GROUP, C/O AV WALKER, 51 CARONIA CRES, MT ROSKILL, AUCKLAND
ZL1HL CARREL, J L, 167 ST ANDREWS RD, EPSOM
ZL1HMS FREELY, W B, C/O B ROWLINGS, 22 TAINUI ST, ONERAHI, WHANGAREI
ZL1HMT TOLLENAAR, H, 1/33 ARGO DRIVE, HALFMOON BAY, AUCKLAND 1706 .
ZL1HN FARRELL, B, 18 OBAN AVENUE, GLENVIEW, HAMILTON

ZL1HO SANDO, B C, PO BOX 31794, MILFORD, AUCKLAND 1309

ZL1HOG SANDO, P O BOX 100-028, NORTH SHORE MAIL CENTRE, AUCKLAND

ZL1HP CAMBRIDGE AMATEUR RADIO CLUB, PO BOX 650, CAMBRIDGE

ZL1HR COLES, J P, 42 HARTFORD AVE, PAPAMOA

ZL1HRP PRITCHARD, H R, 1-67 Gribblehirst Raod, Sandringham, AUCKLAND

ZL1HS CARTER, C I N, 4 ROACH STREET, OAMARU

ZL1HT HARDIE, B G S, C/O MRS C PATON, 1 K R D, OAMARU

ZL1HU GARTON, W G, THE WOOD RETIREMENT VILLAGE, VILLA 3, 156 MILTON STREET, NELSON

ZL1HUE HUG, E K, PAGODA LODGE, PA ROAD, KERIKERI

ZL1HV GODFREY, A G, 882 EAST COAST RD, BROWNS BAY

ZL1HW DICKINSON, R, 135 GREENHITHE RD, GREENHITHE, AUCKLAND 1450

ZL1HY EDWARDS, M B, 1031 PIAKONUI ROAD, WALTON

ZL1HZ CURTIS, C E, 5 ARGYLE RD, BROWNS BAY, AUCKLAND 10

ZL1IA PIVAC, I G, 4271 GREAT NORTH RD, HENDERSON, AUCKLAND

ZL1IAG MARSH, M D, 28 CHELVERTON TERRACE, RED BEACH, AUCKLAND 1461

ZL1IAN HONEY, I, 68 SHAKESPEARE ST, LEAMINGTON, CAMBRIDGE

ZL1IB NZART TE PUKE BRANCH INC, C/- S.J. ROWE, 223 State Highway 33, RD 9

ZL1IBM Mosely, I B, Rockell Rd, R D 1, Hikurangi

ZL1IC HOLDSWORTH, R, SEXTON RD, RD 1, HAMILTON

ZL1ICU Mathews, Laurence, P O Box 17183, Greenlane, Auckland

ZL1ID GRAHAM, N L, 75 CAMPBELL RD, MT MAUNGANUI

ZL1IE HEYWOOD, B, 41 Merriman Place, Barkes corner, TAURANGA

ZL1IF NORLING, LARS, PO BOX 1266, WHANGAREI

ZL1IG MONKS, J, FLAT 2, 9 ABELIA PLACE, PAPATOETOE

ZL1IH INTEMANN, R H D, 22 HIKUTAIA RD, OPOTIKI

ZL1II GREEN, G P C, 248A OTIPUA RD, TIMARU

ZL1IJ DAVISON, J G, 19 THOMPSON TCE, MANUREWA, AUCKLAND 1702

ZL1IM CARTER, E W A, 3 HAINES TCE, TE KUITI

ZL1IMP PRATT, I M, 25 SMITH ST, RAGLAN

ZL1IOY YOUNG, I, 146 THE DRIVE, EPSOM, AUCKLAND

ZL1IP HILDRETH, D N, 1550 STATE HIGHWAY 16, WOODHILL, R D 2, HELENSVILLE

ZL1IR DOUGLAS, L M, 29 CHARLES CRES, HAMILTON

ZL1IS NZART BRANCH 81, PO BOX 606, HAMILTON

ZL1ISC CLARK, S P, 79 PARKHILL RD, BIRKENHEAD, AUCKLAND 1310

ZL1ISM Mayhew, Christopher, 2 William Street, Waihi

ZL1IST SCHNABL, I, PO BOX 690, YACHT IDEMO, TAURANGA

ZL1IU WALLACE, N L, SIGNALS RD, R D 1, OKAIHAU 0455

ZL1IV IRVING, G W, 50 GLASS RD, MT ROSKILL

ZL1IVO PABBRUWE, I, 99 BRADBURY RD, HOWICK

ZL1IW WATSON, I B, KOHINUI RD, RD1, ONERAHI, WHANGAREI

ZL1IY CLELAND, D E, 52 ALFRED ST, HAMILTON

ZL1IZ WAITOMO BRANCH 55 NZART (INC), 3/49 HINEWAI STREET, OTOROHANGA 2564

ZL1JA BERENDS, J M, 74 QUEENS AVE, WAIKUKU, RD 3, RANGIORA

ZL1JAM MACCALLUM, J, 128 GILLS ROAD, BUCKLANDS BEACH, AUCKLAND

ZL1JAQ GOODENOUGH, J M, 754 EAST COAST RD, BROWNS BAY, AUCKLAND 1310

ZL1JAT TEHOAKI, J A, 13 SUTTON ROAD, DRURY, AUCKLAND

ZL1JAW WEST, J A, 4 CRADOCK ST, AVONDALE, AUCKLAND

ZL1JAZ STIRLING, B T, 46 HARROWFIELD DRIVE, FLAGSTAFF, HAMILTON

ZL1JB NALDER, C H, 403 b Woodstock Rimu Road, RD3, Hokitika

ZL1JBM MULHOLLAND, J B, C/- 59 SUNRISE AVE, MURRAYS BAY, NORTH SHORE

ZL1JC GRANGER, P L, 11 TAIT STREET, AVONDALE, AUCKLAND 1007

ZL1JD DUNN, J R, 264 GLENVAR RD, TORBAY, AUCKLAND 1310

ZL1JDL HILDRETH, J D, 1550 STATE HIGHWAY 16, WOODHILL, R D 2, HELENSVILLE

ZL1JF FINLAY, P T, 62 WOODSIDE RD, HENDERSON

ZL1JG DENT, R E, 7C BEACH ROAD, OREWA, HIBISCUS COAST 1461

ZL1JH HALDANE, J E H,

ZL1JI LIU, ZHEN, 5/7 Edenvale Park Road, MT EDEN, AUCKLAND

ZL1JIM DILLEY, J V, BAYSWATER MARINE, SIR PETER BLAKE PARADE, BAYSWATER, AUCKLAND

ZL1JJ JACKSON, D W, 30 SUN GROVE RISE, SUNNYVALE, AUCKLAND 1008

ZL1JJB BRUMMER, J J, 154 NIXON STREET, HAMILTON EAST, HAMILTON

ZL1JK FREEMAN, J C, 3/7 Belle Verde Drive, MAIRANGI BAY, AUCKLAND 1310

ZL1JKB BELL, J K, 28 SEYMOUR AVE, PAPATOETOE, AUCKLAND 1701

ZL1JKD DOUGAN, J K, 40 DAVINGTON WAY, EAST TAMAKI, AUCKLAND 1701

ZL1JL LLEWELLYN, J, RD 2 SWY 12, MATAKOHE

ZL1JLB BYRNES, J L, 6 WALLACE PLACE, B ETHLEHEM, TAURANGA

ZL1JM MCINTYRE, J, 26 KOKOMO KEY, PAPAMOA 3003

ZL1JN TURNER, A, 140 UNION RD, HOWICK, AUCKLAND 1705

ZL1JNA JINAPUN, A, 172 MAHIA ROAD, MANUREWA, AUCKLAND

ZL1JO WALKER, N A, 14 MAWNEY RD, HENDERSON, AUCKLAND 1008

ZL1JOE TILLEY, K J, PO BOX 585, OPOTIKI

ZL1JON BARE`, J A, 6 ROSE PLACE, KAMO, WHANGAREI

ZL1JP BUCKTON, J V, 103 DRAYCOTT LANE, KNIGHTSBRIDGE RETIREMENT VILLAGE, MAIRANGI BAY, AUCKLAND

ZL1JR JONES, J W W, PO BOX 39 403, HOWICK

ZL1JRJ JONES, J R, PO BOX 181, OPOTIKI

ZL1JRL LOTHROP, J, P O BOX 1709, WHANGAREI

ZL1JRR Reece, John Robert, 3a Westney Road, Mangere, Auckland

ZL1JS MOYNIHAN, E N, 24 TAIKATA RD, TE ATATU NORTH, AUCKLAND 1008

ZL1JSM MACKINNON, J S S, 10 WILLIAMS CRESCENT, POINT WELLS, R D 6 WARKWORTH

ZL1JSS SMYTH, J, C/- P & J SMYTH, 855, NO 1 ROAD, RD 2, TE PUKE

ZL1JT TURNWALD, J B, 29 CLIFF VIEW DRIVE, GREEN BAY, AUCKLAND

ZL1JU TEVIOTDALE, B M, PO BOX 7051, ROTORUA

ZL1JW PALTRIDGE, J S, 3 TUTERE RD, PAPATOETOE

ZL1JWF FARMER, J W, 3 MATILDA PLACE, KAITAIA

ZL1JYM MOORE, J B, 37-A KIMBERHALL AVE, MT ROSKILL, AUCKLAND 1004

ZL1JZ DAVISON, P W, 59 BEERESCOURT RD, HAMILTON

ZL1KA ADDIS, B G, 21 CLARK RD, R D 1, KARAKA 1750

ZL1KAC MCMURRAY-CATHCART, K A, PO BOX 2555, SHORTLAND STREET, AUCKLAND 1015

ZL1KAG GOULD, T M, 7 PLUNKET STREET, DARGAVILLE 0300

ZL1KAN LEES, M J, 30 FOUNDRY ROAD, SILVERDALE, HIBISCUS COAST AUCKLAND 1462

ZL1KB NEILL, P S, 11 TAUHARA STREET, GREEN BAY, AUCKLAND

ZL1KCA AW, K C, 80 SUMMERLAND DRIVE, WESTERN HEIGHTS, HENDERSON, AUCKLAND

ZL1KCJ LEWIS, Karen, 10a Anthony Cres, Fitzroy, Hamilton

ZL1KD FAIRWEATHER, A W, 69 BURWOOD RD, MATAMATA

ZL1KE PEDERSEN, K W, PO BOX 207, MANGONUI 0557

ZL1KEV DOVE, K N, 64 MORROW AVENUE, PO BOX 20337, HAMILTON 2035

ZL1KF COLE, L J, 22 NEWCASTLE RD, DINSDALE, HAMILTON

ZL1KFM MITCHELL, K, 129 RIVERTON DRIVE, RANDWICK PARK, MANUREWA AUCKLAND 1702

ZL1KG RAMSAY, R J, 2A KING ST, WHANGAREI

ZL1KHN Roberts, G, P O Box 39 631, Howick, Auckland

ZL1KI HORWOOD, E W, 233 KING ST, WHAKATANE

ZL1KIV KIVELL, G J, PO BOX 145, KAWAKAWA 0291

ZL1KIW BOWERS, D, 19 HOLLAND GROVE, RICHMOND HEIGHTS, TAUPO

ZL1KJ COLE, GARY J, 25 MATANGI TERRACE, SNELLS BEACH 1241

ZL1KJU ULMER, K J, YACHT MEHITABEL, C/- TOWN BASIN MARINA 37 QUAYSIDE, WHANGAREI

ZL1KK HARRISON, I A, 242C RAWHITI ROAD, RD 2, TE AROHA

ZL1KL COOPER, H G T, 5 GRAHAM PLACE, OTUMOETAI, TAURANGA

ZL1KLC CARY, K L, P O BOX 92, GREENHITHE, AUCKLAND 1330

ZL1KLP LUOSTARI, R P S, 69 HIGHRIDGE ROAD, CLEVEDON, AUCKLAND

ZL1KM PETERSEN, K, 30B WILLOWBROOK LANE, R D 8, HAMILTON

ZL1KMB BREWER, K, 2 FLAGSTAFF TCE, DEVONPORT, AUCKLAND 1330

ZL1KMN FICZA, A, 111 View Road,, Sunnyvale, AUCKLAND

ZL1KN HARRISON, N, 242C RAWHITI RAD, RD2, TE AROHA

ZL1KO GUBBINS, C P, 3 SACKVILLE ST, GREY LYNN, AUCKLAND 1002

ZL1KP BURGESS, A B, 4 KILLARNEY ST, TE PUKE

ZL1KPH HEMSWORTH, K, 20 ATHENRY PLACE, DANNEMORA, HOWICK AUCKLAND 1705

ZL1KQ SMALL, J, 32 PADDINGTON ST, GLEN INNES 1006

ZL1KR KLEYBURG, A, 12 CHERRYWOOD ST, HAMILTON

ZL1KRH HAMPSHIRE, K R, 5 SAPPHIRE DV, TAURANGA

ZL1KRS STEWART, K R, 5E SPRINGFIELD RD, ROTORUA

ZL1KS SMITH, K E, 27 BEDFORD STREET, TE ATATU SOUTH, AUCKLAND 1008

ZL1KSB BENNETT, S J, 39 ADDINGTON RD, MANUREWA, AUCKLAND

ZL1KSS SPENCE, K S, 1 KAHAROA AVE, OMOKOROA 3050

ZL1KT TEVIOTDALE, D A, 7 BUDGEN ST, MT ROSKILL, AUCKLAND

ZL1KU BROOKING, K J,

ZL1KV POOLEY, E A, 5 OTTO ROAD, WAIHI BEACH, WAIHI
ZL1KW NZART KAWERAU BRANCH, C/O MRS BA OSBORNE, 34 COBHAM DRIVE, KAWERAU
ZL1KWS KIM, W S, 41 LEWIS STREET, GLENVIEW, HAMILTON
ZL1KX WALFORD, K W, 52B SMITHFIELD RD, WANGANUI
ZL1KZ ELLERY, H F, 26 CATALINA CRES, FORREST HILL
ZL1LA ANDERSON, L J, 19A TUI GLEN RD, BIRKENHEAD
ZL1LAT SYLVESTER, R L, 19 RINGWOOD ST, TORBAY, AUCKLAND 1310
ZL1LB LAURENT, L M, 54 LAGOON DRIVE, PANMURE, AUCKLAND
ZL1LC REED, G N, PO BOX 3700, SHORTLAND STREET, AUCKLAND
ZL1LD DUXFIELD, L R, 813A TENFOOT ROAD, ORINI
ZL1LDS SIMPSON, L D, 16 HILLCREST AVENUE, HILLCREST, ROTORUA
ZL1LE EGAN, B, 12 ISLAND VIEW TCE, HOWICK
ZL1LED Mayhew, Christopher, 2 William Street, Waihi
ZL1LES SAVAGE, L W, 99 TAUPO VIEW RD, TAUPO
ZL1LEZ ZISKA, LEONARD E, 77 MURICATA AVENUE, MT MAUNGANUI
ZL1LF ELDER, J W, PO BOX 75, TEMUKA
ZL1LFA ATKINSON, L F, State Highway 1, R D 2, Kaitaia 0482
ZL1LG WOODFIELD, L A, 182 INGLETON ROAD, RD 2, WELLSFORD
ZL1LGM MANNING, L G, 7/157 BAYSWATER AVENUE, BELMONT, AUCKLAND 1309
ZL1LH COWIE, D J, 15/10 SHELLY BEACH ROAD, HERNE BAY, AUCKLAND 1001
ZL1LI HUGHES, P D P, 13 DU FRESNE PLACE, TAPEKA POINT, RUSSELL
ZL1LIN MARR, L J, C/- NZMCA MAIL DROP SERVICE, PO BOX 72147, PAPAKURA AUCKLAND
ZL1LJ SCUTTS, L J, C/O 509 BROWN ST, THAMES 2801
ZL1LK SARGON, R P, 2A ENDERBY DRIVE, TE ATATU NORTH
ZL1LL MCDONALD, L J, 25 JOHN ST, PUKEKOHE
ZL1LM MARSDEN, A N, 4B Rosario Crescent, Red Beach, Orewa
ZL1LN SIMMONS, A L, 69 ROBERTS AVE, BAYSWATER, AUCKLAND 9
ZL1LNX FULTON, M V, FLAT 2 369 SUNSET ROAD, SUNNYBROOK, ROTORUA
ZL1LO BUCKINGHAM, P J, P O BOX 138, PUTARURU, SOUTH WAIKATO
ZL1LON BROADBENT, N, 29 SHORT ST, TAURANGA
ZL1LP YOUNG, J R, Po Box 1230, PUKEKOHE, AUCKLAND
ZL1LR ANDERSON, P C, 32 GILMOUR ST, WAIHI
ZL1LSQ AITCHISON, P J, 1V DOMAIN TERRACE, 1 GEORGE STREET, NEWMARKET AUCKLAND 1001
ZL1LT MALCOMSON, M R J, 413 FRASER ST, TAURANGA
ZL1LU HESLOP, W T, 19 CORINNA ST, TAURANGA
ZL1LVJ FITCH, C J, 201 COUCH ROAD, RD 2, KAITAIA
ZL1LWC CHANDLER, L W, 158A WAIHI RD, TAURANGA
ZL1LWR ROWE, S J, TE PUKE AMATEUR RADIO CLUB INC, C/- SJ ROWE ZL1LWR, 223 STATE HIGHWAY 33, RD 9
ZL1LY BROWN, K L, 38 THOMPSON ST, TOKOROA
ZL1LZ DUNWOODY, M L, 359 FAIRVEIW RD, TE AWAMUTU 2400
ZL1MA GIBBONS, A L C, 27 LISA RISE, BUCKLANDS BEACH, AUCKLAND 1705
ZL1MAC MCPIKE, B G, 1/3 BARDIA ST, BELMONT, AUCKLAND 1309
ZL1MAN CRAWFORD, GRANT, 42 FOREST LAKE RD, HAMILTON
ZL1MAT PEARCE, M G, 117 RAUMANGA HEIGHTS DVE, RAUMANGA, WHANGAREI
ZL1MAX CLEAR, M R, LIMMER RD, TE KOWHAI RD 8, FRANKTON
ZL1MB BRETHERTON, M L, 24 ILES RD, LYNMORE, ROTORUA
ZL1MC HUME, S T, 61 EGMONT ST, OHAUITI, TAURANGA
ZL1MCG McGrath, Robin, 8 Ander Place, Takapuna, Auckland
ZL1MCK MCKECHNIE, W E, 20 SAYEGH STREET, ST HELIERS, AUCKLAND
ZL1MD MCLELLAN, A D, 26 ROBERTSON ST, ROTORUA
ZL1MDC MCLELLAN, 39 CHURCHILL ROAD, JUDEA, TAURANGA
ZL1MDS DIGBY-SMITH, M P, 6 BAIRD AVE, TE KAUWHATA
ZL1MEO O'BRIEN, M E, 7 AUCKLAND RD, ST HELIERS, AUCKLAND 1005
ZL1MER HALEY, A M E, 30 BUCKINGHAM CRES, PAPATOETOE
ZL1MF CRABTREE, J A, PO BOX 172, KATIKATI
ZL1MFW FLETCHER, B P M, P.O. BOX 53319, KENILWORTH 7745, CAPE, SOUTH AFRICA
ZL1MG BRETHERTON, E C, 24 ILES RD, ROTORUA
ZL1MGB KENWORTHY, T C, 15 COMMISSARIAT RD, MT WELLINGTON, AUCKLAND 6
ZL1MGS SCHAARE, M G, P O BOX 195, WAIHI
ZL1MH HUTCHINS, M G D, PO BOX 581, KAIKOHE 0400
ZL1MHS BRUCE, K W, 37 JAPONICA AVE, BIRKDALE, AUCKLAND 10
ZL1MI WARRINER, A D, 184 KAURI RD, WHENUAPAI, AUCKLAND 1250
ZL1MJ SCHWASS, B R, 24 MOKORUA GROVE, WHAKATANE
ZL1MJB BARTON, M J, 11 RAKAU VIEWS, OREWA, AUCKLAND 1461
ZL1MJG GRAY, MICHAEL, 5 TANIA PLACE, TIKIPUNGA, WHANGAREI
ZL1MJH HOOK, M J, 872 OLD MOUNTAIN RD, RD 1, RAGLAN
ZL1MJO JOB, M N P, 54 TRIANGLE ROAD, MASSEY WEST, AUCKLAND
ZL1MK SPACKMAN, D G, 27 DEKKER RD, RD 3, TAURANGA
ZL1ML LEE, M, 29 OMIHA ROAD, OMIHA, WAIHEKE ISLAND, AUCKLAND
ZL1MLO LOWE, M C, YACHT WILD BIRD, C/O 164-B GLOUCESTER RD, MT MAUNGANUI
ZL1MM GARDE-BROWNE, M, BOWENTOWN RD, ATHENREE RD 1, KATIKATI
ZL1MN NISBET, D I, 8 TUI CRESCENT, DARGAVILLE
ZL1MO SPACKMAN, I H, APP 13P, PINESONG, 66 AVONLEIGH ROAD, TITIRANGI
ZL1MOF MOFFATT, A J, 90 HARTFORD DRIVE, PAPAMOA
ZL1MP POULTON, G G, 7 RICKARDS PLACE, NEW LYNN, AUCKLAND
ZL1MPR PRIER, E, 44 WARNER RD, RD 3, TAURANGA
ZL1MQ DAVIDSON, B J C, 70 ONERAHI RD, ONERAHI, WHANGAREI
ZL1MR WILKINS, D F, PO BOX 72 117, PAPAKURA, AUCKLAND 1730
ZL1MRF MURPHY, K L G, 8 TAMAR PLACE, NAWTON, HAMILTON
ZL1MRG GILES-PAIN, M R,
ZL1MS INDER, J H, 19 RUSHTON AVE, TAURANGA
ZL1MST PATON, J S, 1 TAMARIKI AVE, KELSTON
ZL1MT MINCHIN, H E, RD 1 ARAPUNI, VIA PUTARURU
ZL1MTU DARBY, R, PO BOX 25, RUSSELL
ZL1MU CROOKS, D M, 13 BURROWS AVE, WELLINGTON
ZL1MUA MASSEY UNIVERSITY LEO SATELLITE GROUND STATION, Massey University Institute of Information and Mathematical, PRIVATE BAG 102904 NSMSC AUCKLAND 1330
ZL1MV GARRARD, R C, 9 ATLANTIS STREET, AVONDALE, CHRISTCHURCH
ZL1MVW WILLIAMS, M, 102 TITIRANGI RD, NEW LYNN, AUCKLAND 1007
ZL1MW HUGGARD, B F, 12 MCCLINTOCK RD, MASSEY
ZL1MWP PRITCHARD, M W, APAT 6B KNIGHTSBRIDGE BUILDING, BOARDMAN LANE, NEWTON, AUCKLAND
ZL1MWR Miller, Rex, 8 Tui Crescent, Dargaville
ZL1MX CURRIE, D J, 127 RIDGE RD, HOWICK
ZL1MYF O'GRADY, ANDREW, ATTN: SANDRA VAN ENGELEN, C/- MID NORTH REAL ESTATE, 138 BROADWAY, KAIKOHE
ZL1MZ BLACK, D R, 11 EPSOM AVENUE, EPSOM, AUCKLAND
ZL1NAT HORN, S, 27 TATTERSFIELD PLACE, DINSDALE, HAMILTON
ZL1NAY YOUNG, N, 2/29 GAZELLE AVE, BEACH HAVEN, AUCKLAND
ZL1NB HITCH, G W, MANAWAORA RAWHITI ROAD, PAREKURA BAY, RUSSELL
ZL1NC CLAYDON, N, BOX 209, KAIKOHE
ZL1NE NEILL, T J, 10 PETER BUCK RD, AVONDALE, AUCKLAND 1007
ZL1NF GARRETT, R, 13 ROCK ISLE RD, TORBAY, AUCKLAND 10
ZL1NG MULLER, J, UNIT 1, 7 NEWHAVEN TCE, MAIRANGI BAY, AUCKLAND
ZL1NH WHITE, N R, 33 NORTON RD, OTUMOETAI, TAURANGA
ZL1NI BURGESS, B W, 89B AWANUIARANGI ROAD, RD 4, WHAKATANE
ZL1NJ ECCLESFIELD, B D, 43 MAIHI CRES, TAURANGA
ZL1NJZ DAVISON, P J, 67 CREAN ROAD, R D 2, WAIHI
ZL1NK MANDER, N K, 38 ARUNDEL ST, MT ROSKILL
ZL1NM MEE, N J F, PRIVATE BAG, ORERE POINT, VIA PAPAKURA, AUCKLAND
ZL1NO CHANDRAPALA, C, 3 FISHER TERRACE, KAMO, WHANGAREI
ZL1NP PEART, L C, PO BOX 81, WESTPARK VILLAGE, AUCKLAND
ZL1NPX STANTON, G, 24 THIRD VIEW AVE, BEACHLANDS, AUCKLAND
ZL1NQ BARRELL, S J, R D 1, KAMO, WHANGAREI
ZL1NR BOSSCHE, N, 1300A KAIAUA ROAD, MANGATANGI, POKENO
ZL1NRC SKUDDER, D A, 227 MCLAREN FALLS RD, RD 1, TAURANGA
ZL1NS HICKEY, J, 6, DONZELLA PLACE, TAKANINI, AUCKLAND
ZL1NST LEEK, J W, 30 Casuarine Road, Highland Park, Auckland
ZL1NSY COPPELL, S P, 128A JAMES ST, WHAKATANE
ZL1NT HILL, B J, PO BOX 804, HAMILTON
ZL1NTF HALL, T F, HAPPY VALLEY RD, RD3, TE AWAMUTU
ZL1NUB BULLEN, V M, 32 OTUMOETAI RD, TAURANGA
ZL1NV JACKSON, B T, ALBANY HEIGHTS RD, R D 2, ALBANY, AUCKLAND
ZL1NW GOLDFINCH, R Q, 4 TUKES PLACE, GREENMEADOWS, NAPIER
ZL1NY ORR, N A, 2/34 PROSPECT TERRACE, MILFORD, AUCKLAND 1309
ZL1NZ SANDERSON, N G, 33 SEACLIFFE RD, HILLSBOROUGH, AUCKLAND
ZL1OA STEEGSTRA, R, PO BOX 10-185, WHANGAREI
ZL1OB BOOTH, O R, 40A ESK ST, TAURANGA
ZL1OC SHAW, L S,

ZL1OD WALLACE, J A L, 147 DARWIN RD, GISBORNE
ZL1OF WAPP, A, 14 COUNTRY CLUB LANE, WAIUKU, AUCKLAND 1852
ZL1OG GABBIE, O J, C/O WA PERKINS, 135 HAROLD HOLT AVE PIRIMAI, NAPIER 4001
ZL1OGX WILSON, I, 131 WEATHERLY ROAD, TORBAY, AUCKLAND
ZL1OH FAIRHEAD, A D, 88 RUSHGREEN AVENUE, PAPAKURA
ZL1OIL STURGESS, J G, 157 BLEAKHOUSE ROAD, HOWICK, AUCKLAND 1705
ZL1OM WINDSOR, K W, 36 CHATSWOOD GROVE, BIRKENHEAD
ZL1ONE LAKE, J R, 138 WELLINGTON ST, OPOTIKI
ZL1ONL O'NEILL, G J, UNIT 4, 109 GOWING DRIVE, MEADOWBANK, AUCKLAND 1005
ZL1ONX NEPIA, C, PO BOX 1, RUAWAI, NORTHLAND
ZL1OO DREAVER, B G W, 5 ESSEX ST, TE ATATU SOUTH, AUCKLAND 8
ZL1OP NEALE, H F, 86 MAIN ST, EDGECUMBE
ZL1OR MULLIONS, R E, 1 KENNEDY POINT ROAD, WAIHEKE ISLAND
ZL1OS OSBORNE, B A, 34 COBHAM DRIVE, KAWERAU
ZL1OT EVANS, R J, PO BOX 175, KAEO
ZL1OV KIRTON, F N, 108 WHITEHEAD WAY, PARAWAI, THAMES 2801
ZL1OX CRAWLEY, H V, P O BOX 114, WELLSFORD
ZL1PA MANNING, B F, 6 TUPARE HEIGHTS, GREERTON, TAURANGA
ZL1PAL MEARES, M J, 22A Chivalry Rd, Glenfield, AUCKLAND
ZL1PAM BLACKETT, P H, 56 CHURCH ST, NORTHCOTE, AUCKLAND 1309
ZL1PB BROWN, P F, 143 GRAMPIAN ST, TOKOROA
ZL1PC SLAKO, P W, OAKLEIGH, R D 1, WHANGAREI
ZL1PCA SCHREUDER, JACQUELINE, PO BOX 25036, TOWN BASIN, WHANGAREI
ZL1PD EDE, A F, 57 NO. 3 ROAD, TE PUKE
ZL1PE ERCEG, P J, 8 LAKE ORA RD, THREE MILE BUSH, KAMO, WHANGAREI
ZL1PEC CARPENTER, P E, 'ASPECT OF ARRAN', 26 MISSION RD, KERIKERI
ZL1PEN NOUWENS, A J, 11A WELLESLEY GROVE, GATE PA, TAURANGA
ZL1PG MORGAN, J A, 186 LOBURN WHITE ROCK ROAD, R D 2, RANGIORA, NTH CANTERBURY 8254
ZL1PHD THORN, J, 325A PANAMA RD, MT WELLINGTON, AUCKLAND
ZL1PI MCDONALD, A K, 17 THE GLEBE, WHAKATANE
ZL1PIP Plimmer, Philip, Private Box 302 056, North Harbour, Auckland
ZL1PJ DARE, P H, 28A WHARENUI RD, ROTORUA
ZL1PJC CORNBERG, P J, 13 HERNE BAY RD, HERNE BAY, AUCKLAND
ZL1PJS SMITH, P K, PO BOX 21-904, HENDERSON, AUCKLAND 1008
ZL1PK KING, P D, PO BOX 126, HAMILTON
ZL1PKT AUCKLAND VHF GROUP INC, PO BOX 40-525, Upper Hutt, Wellington
ZL1PL GRISE, M J, 121 JAMES ST, COROMANDEL
ZL1PMB BAIN, PETER, 18A DENNIS TAYLOR COURT, PARAPARAUMU
ZL1PNH HEATH, P N, 29-A CRESTA AVENUE, BEACHHAVEN, AUCKLAND 1310
ZL1PO LISIGNOLI, J T, 216 TRAMWAY RD, FAIRVIEW DOWNS, HAMILTON
ZL1PP DEKKER, P, 118 ALBANY HEIGHTS ROAD, R D 2, ALBANY AUCKLAND 1331
ZL1PR REINHARD JNR, P A, 241 COLLEGE STREET, PALMERSTON NORTH
ZL1PS BROWN, T G, 2 HILSTAN PLACE, ONEHUNGA
ZL1PTY LEE, G E, 9 WALTER LITTLE WAY, CHAPEL PARK, AUCKLAND
ZL1PV COGAN, D G, 54 A MAHOE AVENUE, REMUERA, AUCKLAND
ZL1PWD DENT, P W, PO BOX 7033, TIKIPUNGA, WHANGAREI
ZL1PWG WELLS-GREEN, P S,
ZL1PWS SAVAGE, P W, 99 TAUPO VIEW RD, TAUPO
ZL1PX MARTIN, H L, 25 COCKAYNE CRES, SUNNYNOOK, AUCKLAND
ZL1PY EDE, R P A, 57 NO. 3 ROAD, TE PUKE
ZL1PZ SEXTON, I M, 10 FAIR OAKS, PUKEKOHE
ZL1QB MANUKAU RADIO CLUB, 8 GUIDE PLACE, PAPATOETOE, AUCKLAND
ZL1QE O'BRIEN, GRAEME, PO BOX 300-293, ALBANY, AUCKLAND
ZL1QF FOREMAN, Q S, 4C SEAVIEW RD, TAKAPUNA
ZL1QG MORRIS, D C, 5 WOODSIDE RD, HENDERSON
ZL1QH COOKE, S R, 11 ASHLYNNE AVE, PAPATOETOE, AUCKLAND
ZL1QI GILLETT, P A, PO BOX 3074, TAURANGA
ZL1QK STONE, W H, 5 WINSLOWE PLACE, PAPAKURA
ZL1QL BORCK, L J F, 28 DENBY CRES, WHANGAREI
ZL1QM OCKLESTON, G W, 17 BRACKEN AVE, EPSOM
ZL1QO ELOWSSON, B W, 2/21 SUNDERLANDS RD, HALF MOON BAY, BUCKLANDS BEACH AUCKLAND 1704
ZL1QP BREDEN, J E, 27 MOEHAU ST, TE PUKE
ZL1QW WAIHI & DISTRICT BRANCH NZART INC, 32 GILMORE STREET, WAIHI
ZL1RA SWAIN, R A, TOTARA STREET, EDGECUMBE 3082, BAY OF PLENTY
ZL1RAB BROWN, R A, 23 VALLEY RD, TE PUKE 3071
ZL1RAC DUFFIELD, C E,
ZL1RAD HAWKINS, S P, 16 MCFARLAND ST, REMUERA, AUCKLAND 1005
ZL1RAE SMITH, S, 137 PATTESON AVENUE, MISSION BAY, AUCKLAND 1005
ZL1RAF FARRANT, R A, 3/37 MILL RD, KENSINTON, WHANGAREI
ZL1RAH HANSON, R A, 210 SHIRLEY RD, PAPATOETOE, AUCKLAND 1701
ZL1RAL BROWN, R, PO BOX 54-135, MANA, WELLINGTON
ZL1RAW WILLIAMS, R A, 47 ARTHUR ST, ELLERSLIE, AUCKLAND
ZL1RAY KENDALL, R D, 175 HOT SPRINGS ROAD, KATIKATI
ZL1RB BOGGISS, R J, PO BOX 152, WAIHI
ZL1RBH HOUGHTON, Rhondalin,
ZL1RC ARMSTRONG, R C A, 142 KING ST, CAMBRIDGE
ZL1RCA SANGSTER, I W, 75 ANAWHATA RD, PIHA, AUCKLAND 1250
ZL1RCJ COSSON, B, 707 OWHIWA RD, PARUA BAY, WHANGAREI
ZL1RD LEINWAND, R D, 73 TENDER RD, R D 4 ALBANY, AUCKLAND 1331
ZL1RDK DE KONING, M A J, 247 UPPER HARBOUR DRIVE, GREENHITHE, AUCKLAND 1311
ZL1RDM Matheson, Ross, P O Box 68131, Newton, Auckland
ZL1RDW DE WIT, R, 1 PEGASUS DRIVE, ROTORUA
ZL1RE TERRILL, R, FLAT 10 RSA FLATS, 48 CLARKE STREET, TAURANGA
ZL1RED REDFERN, W H, 3/378 DEVONPORT ROAD, TAURANGA
ZL1REY MACHADO, R J, 23 PARKLAND CRESCENT, KAMO, WHANGAREI
ZL1RF MATAMATA AMATEUR RADIO CLUB, 65 SMITH ST, MATAMATA
ZL1RFG GREEN, ROYCE, 6 CHURCH STREET, TE AROHA
ZL1RG JONES, M N, 96 RUSSELL RD, HUNTLY
ZL1RGO SCRUTON, M H, 662 ROTONGARO RD, RD 2, HUNTLY 2191
ZL1RH HOYLE, R P, 54 WAITETE RD, WAIHI
ZL1RI STURM, F R, R D 8, MAHIA BEACH
ZL1RJ JARLOV, R W E, 85 MALLARD DRIVE, ROTORUA
ZL1RJS STOKES, R J, 6B ORANGEWOOD DRIVE, HOWICK, AUCKLAND 1705
ZL1RKL SMITH, M, YACHT ANNA TAURANGA BRIDGE, MARINA PO BOX 4500, MOUNT MAUNGANUI
ZL1RKY Young, R K, P O Box 13029, Tauranga
ZL1RL LANGRIDGE, R A, 16 JELLICOE ST, WHANGAREI
ZL1RM JEFFS, J F C, 7 CASHMERE PLACE, FLAGSTAFF, HAMILTON 2001
ZL1RMC ROSMINI COLLEGE PARENT TEACHERS FRIENDS ASSOCIATION (INCORPORATED), 36 Dominion Street, Takapuna, Auckland
ZL1RN HEAL, E J, 1/316 ST MARYS AVENUE, TE AWAMUTU
ZL1RNF FRANCIS, R N, 4 ESSEX ST, TE ATATU SOUTH, AUCKLAND 1008
ZL1RO BOSHIER, R, 30 AYTON DRIVE, GLENFIELD, AUCKLAND 1310
ZL1ROB GOING, R W, 52 FISHER TCE, KAMO, WHANGAREI
ZL1ROD RODNEY AMATEUR RADIO CLUB INC, PO BOX 587, WARKWORTH 1241
ZL1ROK VINCENT, M P, 76 DAIRY STREAM ROAD, DAIRY FLAT, R D 4, ALBANY, AUCKLAND
ZL1ROT ROTORUA BRANCH 33 (NZART) INC, WOHLMANN HOUSE, 1029 HINEMOA ST, ROTORUA
ZL1RP REYNOLDS, C, AVON RD, RD1, POKENO
ZL1RR RYAN, D F, 129 COOK ST, HOWICK
ZL1RRV HARVEY, R F, 33 BIRDWOOD AVE, PAPATOETOE
ZL1RS SUTTON, R J, C/- MRS L M SUTTON, 207 FERGUSSON DRIVE, THAMES
ZL1RSC CAMPBELL, R S, 1/64 JACK STREET, OTANGAREI, WHANGAREI
ZL1RT MAGINNITY, D, 4 COTTAGE LANE, 154 PUKETE RD, HAMILTON 2001
ZL1RU GOOCH, G M, 21 JEFFREYS RD, FENDALTON, CHRISTCHURCH
ZL1RV PEMBERTON, R, 147A CHURCH ST, ONERAHI, WHANGAREI
ZL1RVR VOORBURGH, R, 70A HOWE STREET, HOWICK, AUCKLAND 1705
ZL1RW WILSON, R M, LONGWOOD, ANDERSON RD, RD 5 WARKWORTH 1241
ZL1RWB BARRAUD, R W, 85 TARGET RD, GLENFIELD, AUCKLAND 1310
ZL1RWJ JOHNSON, R W, PO BOX 33, TE KOPURU
ZL1RWM MCNAMARA, R W, 161 CHURCH ST, OPOTIKI
ZL1RWR RICHARDSON, R W, PO BOX 20-114, HAMILTON
ZL1RX WIGHTON, A K, C/O BETHLEHEM POST OFFICE, TAURANGA
ZL1RY SHIMMIN, R L, 130 UNION RD, HOWICK

ZL1RZ JOHNSTONE, A R, 31 RAKEIORA GROVE, KOROKORO, LOWER HUTT
ZL1SA FRANKLIN AMATEUR RADIO CLUB INC, THE PRESIDENT, 10 COLLINGWOOD ROAD, WAIUKU 1852
ZL1SAD ALDERSON, S E, 8 STONELEIGH DRIVE, CHARTWELL, HAMILTON
ZL1SAM CALDWELL, B, 289 HOBSONVILLE ROAD, HOBSONVILLE, AUCKLAND
ZL1SB SAPICH, S, 148 FOREST HILL ROAD, RD 1, HENDERSON
ZL1SC CORRIGAN, M L, PO BOX 40-135, GLENFIELD, AUCKLAND 1330
ZL1SD COLQUHOUN, R D, RANGITANE LOOP ROAD, RD1, KERIKERI
ZL1SDD DARDEN, S C, PO BOX 161, RUSSELL
ZL1SEA A.N.A.R.S., HOLDER: MR A E LOCK, 27 REGENT DRIVE, PARAPARAUMU
ZL1SEW Wilton, Steven, 63 Ross Street, Woodville
ZL1SFP POPE, S F,
ZL1SH ADAIR, M W, 2/33 SEA VISTA AVENUE, BIRKENHEAD, AUCKLAND
ZL1SJ HOLMES, G C, 4/43 HOWE STREET, HOWICK, AUCKLAND
ZL1SJC CRAWFORD, J S, 7A Gloucester Road, Manurewa, AUCKLAND
ZL1SJW WILLIAMS, S J, 16-B MARINA RD, TORBAY, AUCKLAND 1310
ZL1SK THOMAS, M R, 52 BOLLARD AVE, AVONDALE
ZL1SKC SAINT KENTIGERN COLLEGE, PO BOX 51-060, PAKURANGA
ZL1SKF FAUPEL, S K, 60 FORDYCE AVENUE, PAKURANGA, AUCKLAND 1706
ZL1SLM DUHS, P E, P O BOX 12-309, PENROSE, AUCKLAND
ZL1SLO DUNATOV, F, 1-231 POINT CHEVALIER ROAD, POINT CHEVALIER, AUCKLAND
ZL1SM DROEGE, H, PO BOX 38-336, HOWICK, AUCKLAND 1730
ZL1SMG DONALDSON, G D, 13 SAMPLE ROAD, ALBANY, AUCKLAND
ZL1SMP PAYNE, S, 75 HOSPITAL RD, MAUNU, WHANGAREI
ZL1SN NEL, S N, 244 CASTLEWOLD DRIVE, STERLING GATE, TAURANGA
ZL1SO MILLER, R L, 52 HINEKURA RD, TAUPO
ZL1SP BAIN, F J, 58 GEORGE CRES, BUCKLAND, R D 2 PUKEKOHE 1800
ZL1SPD JAMES, R G A, PO BOX 10-0028, NORTH SHORE MAIL CENTRE
ZL1SQV DAVIS, J S, 15/64 TAPU ROAD, HUAPAI, KUMEU 1250
ZL1SR COPPELL, B L, 128A JAMES ST, WHAKATANE
ZL1SS SKELLON, D B, 36 MOUNTBATTEN AVE, GLENFIELD, AUCKLAND 1310
ZL1ST HUDSON, J, 67A ROTOKAURI RD, NAWTON, HAMILTON
ZL1STR STRACHAN, J A M, P O BOX 147-050, PONSONBY, AUCKLAND
ZL1SV PERKINS, J A, 2 PONUI PLACE, MAIRANGI BAY
ZL1SVD DUOBA, S V, 66 CHERRY LANE, TAMAHERE, RD 3, HAMILTON
ZL1SW WRIGHT, A T,
ZL1SWR DESMOND, G, 5 HUMARIRI STREET, PT CHEVALIER, AUCKLAND
ZL1SWS Shin, Seung Won, 32 Bradbury Road, Highland Park, Manukau
ZL1SWW WATT-WYNESS, S C, 5 ABINGDON PLACE, GLENDOWIE, AUCKLAND 1005
ZL1SY THOMPSON, M G, 13 MCDOWELL ST, ROTORUA
ZL1SZ EVANS, M J, 14 HENDERSON ST, WHAKATANE
ZL1TAA SHARMA, A, 11 SIOTA CRESCENT, KOHIMARAMA, AUCKLAND 1005
ZL1TAB HAYMAN, S R, 68 KATH HOPPER DRIVE, OREWA, AUCKLAND 1461
ZL1TAD DOAR, T A, 49B PEACH RD, GLENFIELD, AUCKLAND 1310
ZL1TAE RISTIC, A T, BUCKLAND RD, R D 4, TUAKAU 1892
ZL1TAG PLIMLEY, A E, 104 PARAWAI RD, THAMES
ZL1TAI MCBURNEY, R T, 25 HAMILTON RD, PAPATOETOE
ZL1TAJ ELLIS, NEIL MARTIN,
ZL1TAK SERGENT, P A, 20 MARIE AVE, TE ATATU SOUTH, AUCKLAND
ZL1TAL BURRAGE, D A, 31/59 SACKVILLE STREET, GREY LYNN, AUCKLAND 1002
ZL1TAN O`CALLAHAN, D R, 18/8 HAMILTON ROAD, HERNE BAY, AUCKLAND
ZL1TAO KIMBER, W, 239 BRUCE RD, LEVIN
ZL1TAP RACE, A P, 8C NOVELLE GROVE, PAPAMOA
ZL1TAR WILKINSON, R N, 19 ISLAND BAY RD, AUCKLAND
ZL1TAS WILKINSON, 2/56 Challen Close, Takanini
ZL1TAT BROWN, I W, 35 LANCASTER ST, HAMILTON
ZL1TAU COGHLAN, P R, 17 QUARTLY PLACE, HUNTINGDON PARK, EAST TAMAKI AUCKLAND 1701
ZL1TAY THORNTON, D, 12 RAHUI ROAD, GREENHITHE, AUCKLAND
ZL1TAZ PURDY, G N, MAYGROVE OREWA VILLAGE, 21/65 TAURANGA PLACE, HIBISCUS COAST OREWA
ZL1TB HOWICK & DISTRICTS RADIO CLUB, C/O 1/1 CASTLEMAINE CLOSE, HOWICK, AUCKLAND 1705
ZL1TBA REID, G, 14 EPPING PLACE, TAUPO
ZL1TBB CARTER, R, 70 RANFURLY STREET, DARGAVILLE
ZL1TBE ESSIPOV, B, MEADOW COURT MOTEL, PO BOX 23 001, PAPATOETOE AUCKLAND
ZL1TBG SANSON, R G, 55 BERTRAM ST, WARKWORTH
ZL1TBH WOODING, G, 28 SADDLEBACK RISE, MURRAYS BAY, AUCKLAND
ZL1TBK KEENE, B S G, PO BOX 426, WHANGAREI
ZL1TBL MCKENZIE, C T, 2 IRENE AVE, MT EDEN, AUCKLAND 1003
ZL1TBM JULIAN, I R,
ZL1TBN SANDERS, P, NEWELLS RD, RD 3, HAMILTON
ZL1TBP CROLL, D, 25 POUWHARE ST, WHAKATANE
ZL1TBQ ANGELL, A R, 2/29 TWEED ST, MT MAUNGANUI
ZL1TBX BOTT, A D, PO BOX 11-056, ELLERSLIE, AUCKLAND
ZL1TBY SECCOMBE, J G, RD 1, OAKLANDS RD, PAPAKURA
ZL1TBZ TATTON, W C,
ZL1TC METCALFE, A D, 2 MACKAY CRES, RD 3, TE AROHA 2971
ZL1TCA CLARKE, C A, PO BOX 258018, GREENMOUNT, AUCKLAND
ZL1TCC TOPFER, K, 11 EDITH PLACE, HAMILTON
ZL1TCE NATION, D L, 54 PRISK ST, HAMILTON
ZL1TCF FORTUNE, T L, 129 BLEAKHOUSE RD, HOWICK
ZL1TCH Nielsen, Darryl, 108 Te Haumi Drive, Te Haumi, Paihia 0252
ZL1TCI GRANGE, D L, PO BOX 80-026, GREEN BAY, AUCKLAND
ZL1TCJ JACKSON, L H, 5 RIPON CRES, MEADOWBANK, AUCKLAND 1005
ZL1TCK WOOLLEY, M G, 5A SPRINGBANK LANE, TE ATATU NORTH
ZL1TCN HERBERT, E R, 86 C Kenny St, WAIHI
ZL1TCO TAPP, A J, 94/21 FAIRVIEW AVENUE, ALBANY, AUCKLAND 1311
ZL1TCP MATTLER, J L, 644 PARK ROAD, TE AWAMUTU
ZL1TCR BELL, K G,
ZL1TCS BILLING, C I, 16 DOBELL RD, WHANGAPARAOA 1463
ZL1TCU LEGG, M E, 1/15 HATTON ROAD, OREWA
ZL1TCX TAYLOR, A J, 56 MAYFAIR CRESCENT, MAIRANGI BAY, AUCKLAND 1310
ZL1TCZ TURNWALD, F L, 29 CLIFF VIEW DRIVE, GREEN BAY
ZL1TD BOYCE, K R, 33 LAMBETH RD, MT ROSKILL, AUCKLAND
ZL1TDA SHACKLETON, R D, 35 HILL RD, WAIHEKE ISLAND, AUCKLAND
ZL1TDB DINGLEY, J H, 2139 GT NORTH RD, AVONDALE, AUCKLAND 1007
ZL1TDE DAVIS, W L, 48 CHATSWORTH CRES, PAKURANGA
ZL1TDF FULLERTON, D, 9 LAURA STREET, KELSTON, AUCKLAND 1007
ZL1TDG MORRIS, V, 1/1 CASTLEMAINE CLOSE, HOWICK, AUCKLAND 1705
ZL1TDH DUNSBEE, B L, 250 GUN CLUB RD, R D 1 PUKEKOHE, AUCKLAND 1800
ZL1TDI LEE, C P, 117 CHELSEA VIEW DRIVE, BIRKENHEAD
ZL1TDJ BURTON, R D,
ZL1TDO O'BRIEN, D, PO BOX 300293, ALBANY, AUCKLAND 1331
ZL1TDQ WOODFIELD, D M, 40B SEACLIFFE ROAD, HILLSBOROUGH, AUCKLAND
ZL1TDR HARDING, B D, 25 MEADOWCROFT GROVE, JOHNSONVILLE, WELLINGTON
ZL1TDS WRIGHT, M E, 26 TAWA STREET, EDGECUMBE
ZL1TDU ALLAN, P K, 12 HIGH ST, WHANGAREI
ZL1TDV PENWARDEN, E C, 61 CATHERINE CRESCENT, WHITIANGA
ZL1TDY COGNET, P J, 33 PHILLIPS DRIVE, OROPI DOWNS, TAURANGA
ZL1TDZ MILLER, C J, PO BOX 128-152, REMUERA, AUCKLAND 1136
ZL1TE LYNNEBERG, R, 7 BEACH HAVEN PLACE, PARAPARAUMU BEACH 6450
ZL1TEE FARMER, P F G, PARADISE, WHANGAPOUA RD, RD 2, COROMANDEL 2851
ZL1TEH TEH, Y W, 18 AUGUSTA PLACE, KAMO, WHANGAREI
ZL1TEM GULLIVER, E J, 10 VALLEY RD, MT EDEN, AUCKLAND
ZL1TEO GROSSMAN, R W, PO BOX 80-080, GREEN BAY, AUCKLAND 1230
ZL1TER MIDDLETON, T, 130 RAHU RD, MACKEYTOWN, R D 4 PAEROA
ZL1TET DU TOIT, E, 1/13 LANDSBERG WAY, MAIRANGI BAY, AUCKLAND
ZL1TEV BARNETT, D S, 16 PEMBROKE ST, MOEREWA
ZL1TEX SANDS, J E, 81 ROSS LANE, KUMEU, AUCKLAND
ZL1TEY MCDONALD, M S, 52 CARGILL ST, PAPAKURA 1703
ZL1TEZ GIBBONS, TERRY JAMES, C/- 101A KOHIMARAMA ROAD, MISSION BAY, AUCKLAND
ZL1TF MORRISON, I M, 1520B STATE HIGHWAY 10, KERIKERI, RD3, BAY OF ISLANDS
ZL1TFA SCHWARZ, B A, 6 LEEDS ST, HAMILTON
ZL1TFB COOPER, S W, 202 OTAU MOUNTAIN RD, RD5, PAPAKURA AUCKLAND 1730
ZL1TFC GODFREY, J P, 15 CROMPTON RD, MASSEY

ZL1TFD IVERSEN, R J, FLAT 1, 3 AKEHURST AVE, NEW LYNN
ZL1TFG BALLANTYNE, D L, PO BOX 28, ALBANY VILLAGE, AUCKLAND 1331
ZL1TFH SWIFT, D M, 18 MARKSON AVE, ONERAHI, WHANGAREI 0101
ZL1TFI NEEDHAM, G M, 117 ROSARIO CRES, RED BEACH, AUCKLAND 1461
ZL1TFO BAINE, C J, PO BOX 1, BROADWOOD
ZL1TFP PURDY, R G, 8 DORCHESTER PLACE, THE GRANGE, OREWA AUCKLAND 1461
ZL1TFW SAVAGE, J, 151 HENDERSON VALLEY RD, HENDERSON, AUCKLAND 1008
ZL1TFX ROWE, R A, 422 THAMES ST, MORRINSVILLE
ZL1TFY MUNYARD, D A, 83 TIVERTON RD, AVONDALE, AUCKLAND 1007
ZL1TG RUMMING, E, 91 WESTERN ROAD, NGONGOTAHA, ROTORUA
ZL1TGA STONE, G P, 377 WELCOME BAY RD, WELCOME BAY, TAURANGA
ZL1TGC HENDERSON, V N, PO BOX 34507, BIRKENHEAD, AUCKLAND
ZL1TGF MULLIONS, B A, 1 KENNEDY POINT ROAD, WAIHEKE ISLAND
ZL1TGG SOPPIT, T R, 73 ASTLEY AVE, NEW LYNN, AUCKLAND 7
ZL1TGM MCGREGOR, G R, 38 KAWITI AVE, POINT ENGLAND, AUCKLAND
ZL1TGP BIELBY, R K, 4 BENNETT RD, PAKURANGA
ZL1TGR HOOLE, G L, 111 BUCKLANDS ST, PUTARURU
ZL1TGS SMITH, J M, 24 DE QUINCEY TCE, HOWICK, AUCKLAND 1705
ZL1TGV HOLMES, B S, RD 3, COAST RD, WAIUKU
ZL1TGW WATSON, E H C, RD 3, EASTBANK RD, WHAKATANE
ZL1TGZ PURVIS COMMUNICATIONS, PO BOX 142, WAIHI
ZL1TH HALL, T, 102 MAHANA ROAD, RD1, WAIMAUKU, AUCKLAND
ZL1THB PHAYER, C,
ZL1THD TURNER, R W, PO BOX 381, TE KUITI
ZL1THF KIRKMAN, B A, CARTGATE, SH 22 GLENMURRAY, R D 5 TUAKAU 1892
ZL1THG BEVAN, T M, 435 WHITIKAHU RD, RD 1, TAUPIRI
ZL1THJ PAUL, R E, PO BOX 33-415, TAKAPUNA, AUCKLAND 1332
ZL1THK RUSSELL, J A, UNIT 1/29 CLONBURN RD, REMUERA, AUCKLAND
ZL1THL PIPER, G L, 16 SAMUEL PLACE, HAMILTON
ZL1THN CROZIER, D K, 154 GREY ST, ONEHUNGA
ZL1THO MCNEIL, D R, 33 EIVERS RD, WHAKATANE
ZL1THU COOKE-WILLIS, S O, 15 MADRAS ST, WELLINGTON
ZL1THW THWAITES, I G, 14/48 ESPLANADE RD, MOUNT EDEN, AUCKLAND 1003
ZL1TI GODKIN, I P, 45 DALWHINNIE PARADE, HOWICK, AUCKLAND 1705
ZL1TIA DINGLEY, D G, P O BOX 19-189, AVONDALE, AUCKLAND
ZL1TIB DOBBIE, C H, 30 FAULDER AVE, WESTMERE, AUCKLAND
ZL1TIC COLES, R I, RD 2, PUTARURU
ZL1TIF CALLAGHAN, P J, PO BOX 10-0735, NORTH SHORE MAIL CENTRE
ZL1TIG PALMER, L H, 10 PUKETAPU CRES, TAUMARUNUI
ZL1TII O`BRIEN, K M J,
ZL1TIK MOWRY, L E, 25 WARWICK PLACE, BROOKFIELD, TAURANGA
ZL1TIL CLARKE, W D,
ZL1TIO BOWERS, S, 21 HINGAIA ST, TURANGI
ZL1TIQ WATSON, J R, 19 TANIA PLACE, BLOCKHOUSE BAY
ZL1TIR MACLARDY, W J, PO BOX 87, WHITIANGA
ZL1TJA POWELL, A T, 17 MURRAY ST, MAEROA, HAMILTON
ZL1TJB BALLANTYNE, J G, BOX 220, KAIKOHE
ZL1TJD LAMBOURN, D, PO BOX 60-258, TITIRANGI, AUCKLAND 1230
ZL1TJF FRAKNOVARY, G A, 10 CANBERRA AVE, LYNFIELD
ZL1TJG FRENCH, T G, 13 BANNERMAN RD, AUCKLAND
ZL1TJH GYDE, G N, 11 MCCRACKEN AVE, HAMILTON
ZL1TJK MUNDEN, A J, 24 PARAONUI RD, TOKOROA
ZL1TJL LAWRENCE, K, P O BOX 25-276, ST HELIERS, AUCKLAND
ZL1TJO BRADFIELD, S J, 18B KITEWAO ST, NORTHCOTE, AUCKLAND 1309
ZL1TJR TRICKETT, N D, 42 RIDDELL RD, GLENDOWIE, AUCKLAND 1105
ZL1TJT MORGAN, A R, 553 MCGREGOR ROAD, R D 2, OHAUPO
ZL1TK HARRINGTON, R J, 45 PINE HILL ROAD, DONCASTER EAST, MELBOURNE, VIC 3109
ZL1TKD GILL-FOX, D A, 23 HINDNESS STREET, HALSWELL, CHRISTCHURCH 8003
ZL1TKE CLARK, D W, 29 PURIRI RD, WHENUAPAI
ZL1TKG TALBOT, V G, 93A PEMBROKE ST, HAMILTON
ZL1TKJ ROBINSON, C S, PO BOX 87-227, MEADOWBANK, AUCKLAND 1130
ZL1TKN BAYLIS, M R, 1 MUNRO ST, WHANGAREI
ZL1TKO OWENS, K, C1/25 CHESHIRE STREET, PARNELL, AUCKLAND
ZL1TKQ DUNCAN, R G, PO BOX 11-040, ELLERSLIE
ZL1TKR FOSTER, B E, 30 MORESBY AVE, WAIHI
ZL1TKS DUNCAN, A K, PO BOX 87337, MEADOWBANK, AUCKLAND 1130
ZL1TKU HILLIAR, D J, 13 CHIPPING DALE, MANGERE BRIDGE
ZL1TKW BODMAN, K I, 9 FAIPING RD, RD 2, HAMILTON
ZL1TL PICKWORTH, R A, 35 GREEN ISLAND BUSH RD, RD1, DUNEDIN 9015
ZL1TLA KOOLEN, J F L, 32 KINGS RD, PANMURE
ZL1TLC MAY, A P, 18 LONGWOOD PLACE, FORREST HILL, AUCKLAND 1309
ZL1TLD WALKER, W D, PO BOX 241, OTOROHANGA
ZL1TLF CADNESS, R H, 109 GLAMORGAN DRIVE, TORBAY
ZL1TLH HARRIS, L I, 104 CAPTAIN SCOTT RD, TITIRANGI, WAITAKERE
ZL1TLJ Warmington, D, 79 Fisher Terrace, Kamo, Whangarei
ZL1TLM TEARLE, M, 11 EPPING ROAD, HENDERSON, AUCKLAND
ZL1TLN ONRUST, F, 52 BAY VIEW ROAD, GLENFIELD, AUCKLAND 1310
ZL1TLO FAULKNER, R E, FLAT 21 - 95 VICTORIA ROAD, ST KILDA, DUNEDIN
ZL1TLS ASHTON, L S, 9 Lauris Place, BIRKDALE, AUCKLAND 1310
ZL1TLU STEVENS, D P, 53 MARELLAN DRIVE, RED BEACH 1461
ZL1TM CHATALOV, A, 98 SARSFIELD STREET, HERNE BAY, AUCKLAND
ZL1TMB MCDONALD, B D, 7 ORIANA AVE, MT ROSKILL
ZL1TMF MCFADYEN, D G, 1 HIKURANGI TCE, TAUMARUNUI
ZL1TMG GREENFIELD, R S T, 33 TUI CRESCENT, MAUNU, WHANGAREI 0101
ZL1TMI MOSELEY, S F, 34 DOMAIN ST, WAIUKU
ZL1TMJ ESSCHER, P, PO BOX 60-428, TITIRANGI, AUCKLAND
ZL1TMK KRAUSE, R E, 7 GORDON ST, KAWERAU
ZL1TML MOUAT, E A, 3 CONNELL ST, WAIHI
ZL1TMO LAWRY, M G,
ZL1TMP PIKE, T M, 468 OHAUITI ROAD, OHAUITI, TAURANGA
ZL1TMQ MCCARTHY, J W, 40 DAGENHAM STREET, MANUREWA
ZL1TMS WATSON, C D, 41 EAST BANK ROAD, RD3, WHAKATANE
ZL1TMV VELDHUISEN, M D, PO BOX 105-304, CENTRAL AUCKLAND
ZL1TMZ LEE, JUNG-SIK, 36 PUKATEA AVE, ALBANY, AUCKLAND
ZL1TN MOORE, T D, 43A UXBRIDGE ROAD, HOWICK, AUCKLAND 1705
ZL1TND PROBINE, D C, 46A PAICE AVENUE, MT EDEN, AUCKLAND 1003
ZL1TNL RODGERS, P A, 22 GOLDERS PLACE, TAUPO
ZL1TNO O`LOAN, T J, 9 WHATAWHATA AVENUE, NGARUAWAHIA
ZL1TNQ TALBOT, A M, 9 WAIAU STREET, TORBAY 1310
ZL1TNY QUEDLEY, F J, 574 WHITFORD ROAD, WHITFORD, AUCKLAND 1750
ZL1TO MCDONALD, T S, 25 JOHN STREET, PUKEKOHE
ZL1TOB CRAWFORD, J V, 2/10 PARK AVE, WHANGAREI
ZL1TOC COLBERT, O C, 390 PONGA RD, R D 4, PAPAKURA AUCKLAND 1730
ZL1TOF BAKER, G S, 10 ANNAGHRY RISE, HOWICK, AUCKLAND 1705
ZL1TOG TAYLOR, L R, 805 RIDDELL RD, ST HELIERS
ZL1TON MELLARS, L R,
ZL1TOQ ASHTON, I M, PO BOX 40-172, GLENFIELD, AUCKLAND 1330
ZL1TOU LOWE, J, 51 EPSOM AVE, AUCKLAND
ZL1TOW ORR, W B, PO BOX 29-045, GREENWOODS CORNER, AUCKLAND 1030
ZL1TOY MCGILP, F C, 6A LILIAN PLACE, PAKURANGA
ZL1TP TAURANGA AMATEUR RADIO CLUB INC, C/O Emergency Management Office, Western Bay of Plenty District Council, PO Box 12-803
ZL1TPB BROOKS, R K, 391 ELLERSLIE PANMURE HWAY, PANMURE
ZL1TPE MCEWEN, D J, 11 MATIPO RD, TE ATATU NORTH, AUCKLAND 1008
ZL1TPG VAN LOON, Q J M, 30 STURGES RD, HENDERSON
ZL1TPH HAYMAN, S R, 68 KATH HOPPER DRIVE, OREWA, AUCKLAND 1461
ZL1TPI SMIRK, A T, 3 MASONS AVE, HERNE BAY
ZL1TPJ WALKER, B J, CRANE RD, R D 1, KAMO
ZL1TPM MEAD, P G, 199A DON BUCK RD, MASSEY, AUCKLAND 8
ZL1TPN LUMMUS, J R, PO BOX 21-048, HAMILTON
ZL1TPO VOS, P M,
ZL1TPQ QUIRK, P D, C/- TOKOROA MOTOR PARK, 22 SLOSS ROAD, TOKOROA
ZL1TPS SOAMES, M P, PO BOX 258018, GREENMOUNT, AUCKLAND
ZL1TPW WILD, P T, 19A DUNN ROAD, PANMURE, AUCKLAND 1006
ZL1TPY BARR, H J, 15 WILLIAM BRYAN DRIVE, BUCKLANDS BEACH, AUCKLAND 1704
ZL1TQF WEBSTER, E T, PO BOX 101, OKAIHAU 0455
ZL1TQM JOSEPH, D H, 38 SUNNYBRAE RD, GLENFIELD
ZL1TQN WOODWARD, N F, 216 PONGAKAWA BUSH RD, RD 6, TE PUKE

ZL1TQQ HOBDAY, D S, 414-A SCENIC DRIVE, WAIATATUA, AUCKLAND 1007
ZL1TQT REID, J D, 631 OMANAWA ROAD, TAURIKO, R D 1, TAURANGA
ZL1TR RIST, T A, 1/139 WYLLIE ROAD, PAPATOETOE, AUCKLAND

ZL1TRA COX, R O, 1/325 GREAT SOUTH ROAD, PAPAKURA, AUCKLAND.
ZL1TRC HARDWICK, D E, 66 NORRIE ST, MELVILLE, HAMILTON
ZL1TRE SHEPHERD, M B, 70A LONG DRIVE, ST HELIERS, AUCKLAND
ZL1TRG WELCOME, P, 12 BATKIN RD, AVONDALE, AUCKLAND 7
ZL1TRH WALKER, A V, 51 CORONIA CRES, MT ROSKILL
ZL1TRJ LAMONT, R J, STATE H/W 3, RD, MAHOENUI 2553
ZL1TRK KELLY, R J, 13B CRYSTAL AVENUE, GLENDENE, AUCKLAND
ZL1TRL HULJICH, A P, 137 TOTARA RD, WHENUAPAI
ZL1TRM BULTE, L W, PARK RD, R D 3, WAIUKU
ZL1TRN NORMAN, R J D-B, 9 CASHMERE DRIVE, AOKAUTERE, PALMERSTON NORTH
ZL1TRV HULJICH, P A, 137 TOTARA RD, WHENUAPAI
ZL1TRW RICHARDS, D C, P O BOX 25-817, ST HELIERS, AUCKLAND
ZL1TRX WILSON, J P, 10 BRIAN AVE, MILFORD
ZL1TRY CAZALET, R, 19 HALBERG ST, PAPAKURA, AUCKLAND 1703
ZL1TS PRENTICE, L G, 5 MOUNTAIN VIEW RD, MORNINGSIDE, AUCKLAND 1003
ZL1TSB BISHELL, S A, 28B ELIZABETH STREET, KENSINGTON, WHANGAREI 0101
ZL1TSF FISH, ALAN, P O BOX 112384, PENROSE, AUCKLAND
ZL1TSG GURR, S W, 3 BRIGHTSIDE RD, STANMORE BAY, WHANGAPARAOA AUCKLAND 1463
ZL1TSN HOLLIS, M A, 3/17 SELWYN RD, EPSOM, AUCKLAND 1003

ZL1TSQ ATTRILL, J J, 7 TAWA ST, MT MAUNGANUI
ZL1TSU MACASKILL, S L, 167 WAIMUMU RD, MASSEY
ZL1TSX WOODFIELD, S A, 19 B CRADOCK STREET, AVONDALE, AUCKLAND
ZL1TT ROBERTS, R L, 39 KAY DRIVE, BLOCKHOUSE BAY
ZL1TTB WEVERS, W F, 61 EDENVALE ROAD, HOWICK, AUCKLAND 1705
ZL1TTC STEVENS, G C, 5 SENATOR DRIVE, ALFRISTON, MANUREWA
ZL1TTE COOKE, D C, PO BOX 44-132, PT CHEVALIER
ZL1TTG COOKE, 28 Coney Lane, Maraetai, Manukau 2018
ZL1TTK NETTLEINGHAM, J, MATAHUI RD, KATIKATI
ZL1TTO CURRAN, W J, OLD ROTOKOHU RD, KARANGAHAKE RD 4, PAEROA
ZL1TTR NICHOLSON, O C, 45 TUATARA DRIVE, KAMO, WHANGAREI
ZL1TTX MOSS, G D, 71 LANDING DRIVE, ALBANY, AUCKLAND
ZL1TTY VUJCICH, L M G, 35 BEACHLANDS ROAD, BEACHLANDS, AUCKLAND 1705
ZL1TU BROUGHTON, T,
ZL1TUB BORMAN, T G, 9B PURIRI ST, TAKAPUNA, AUCKLAND 1309
ZL1TUE ROBINSON, G M, 39 FITZHERBERT AVE, WESTHARBOUR, AUCKLAND
ZL1TUI HANNAM, T M, C/- 2630 NZMCA, P O BOX 72 147, PAPAKURA
ZL1TUJ MARR, G E, 11 LILEY PLACE, REMUERA
ZL1TUQ CAMPKIN, A D,
ZL1TUR TURNWALD, A M, 5 LEIGH TERRACE, BAYVIEW, AUCKLAND 1310
ZL1TUX RAFFLES, G E H, 34 DUNDEE PLACE, BLOCKHOUSE BAY

ZL1TV SEAR, M F, 216 Marina Lane, Friday Harbor, WA
ZL1TVA DHARMAPRIYA, C, 4 ARCHIBALD RD, KELSTON, AUCKLAND 7
ZL1TVC WERDER, G J, SPRINGDALE, RURAL DELIVERY, WAITOA
ZL1TVI HITCHINS, J T, 40 GLENLYNNE AVE, HAMILTON
ZL1TVN FRASER, L B, 34 MACLAURIN STREET, BLOCKHOUSE BAY, AUCKLAND 1007
ZL1TVP AIKIN, P M, 88 ROSS ST, ONERAHI, WHANGAREI
ZL1TVX COBURN, C L, 11 FASCHING LANE, TAURIKO, TAURANGA

ZL1TW WILLCOCKS, R J, 35 PURIRI ST, KAMO, WHANGAREI
ZL1TWD SPARKES, D G, PO BOX 50-482, PORIRUA
ZL1TWE NORRIS, D R H, 14 MANNING ST, HAMILTON
ZL1TWG MOSELEY, S R, 34 DOMAIN ST, WAIUKU
ZL1TWI JONKER, C B, 17 KINNARD LANE, RD 1, PAPATOETOE, AUCKLAND
ZL1TWK BANG, T J, 58 MONARCH AVE, HILLCREST, AUCKLAND 1310
ZL1TWP STONEY, D B, RD 4, WARKWORTH
ZL1TWR PALMER, S D,
ZL1TWX MCFADZEAN, P A, 4 WINSPEAR PLACE, PAPATOETOE
ZL1TX AIKIN, P M, 88 ROSS ST, ONERAHI, WHANGAREI
ZL1TXH SCHULTZ, W, RD 2, SCHULTZ RD, WAIPU
ZL1TXM DEXTER, J D G, 5 HAINES GROVE, RAINBOW POINT, TAUPO

ZL1TXN VICKERY, W L, 3/19 HEAPHY ST, BLOCKHOUSE BAY, AUCKLAND 1007
ZL1TXO DAWSON, R N, 3 WILLOWBROOK, PUKEKOHE
ZL1TXP SCHULTZ, P O, RD 2, SCHULTZ RD, WAIPU
ZL1TXQ ROWE, A N, 100 TOTARA CLOSE, TOTARA, THAMES
ZL1TXS NIELD, I J, 9 HAIG ST, WAIWHETU, LOWER HUTT 6009
ZL1TXT SHOTBOLT, P S,
ZL1TY MONK, W K G, 23 MATIPO AVE, ROTORUA
ZL1TYF TOWLER, T J, 1 OLIVIA CRES, TAWA, WELLINGTON
ZL1TYH BURRELL, C J, 78 LEWIS ST, HAMILTON
ZL1TYJ BALL, R J, C/- WHIRITOA STORE, WHIRITOA, VIA WAIHI
ZL1TYL TAYLOR, P J, 14 GOLLAN RD, MT WELLINGTON
ZL1TYQ SADLER, J, 73 LAUREL DRIVE, RD 6, TAURANGA
ZL1TYR CARTER, R D, 40 MONTGOMERY CRES, HAMILTON
ZL1TYT LOWE, E R, 20 WAIMARIE ST, HAMILTON
ZL1TYV JENKINS, M W, 35 ROBERTSON ST, ROTORUA
ZL1TYW MIDDLEMISS, G D, EUREKA STATION RD, RD 4, HAMILTON
ZL1TZ STEWART, G W,
ZL1TZP DOELL, S D, 199B Queen st, PUKEKOHE
ZL1TZS REEVES, G F, 111 CORNWALL STREET, MASTERTON 5901

ZL1TZU MILLER, R T,
ZL1TZW SHAW, J E M, MAIN RD, PAERATA
ZL1TZX FRYER, B S, 38 MONARCH AVE, GLENFIELD
ZL1TZY NOBLE, P V, 1/25 SHOREHAM STREET, AVONDALE, AUCKLAND 1007
ZL1TZZ SKINNER, D E, 75 LYNBROOKE AVE, BLOCKHOUSE BAY
ZL1UA HARVEY, J K, 93 EIGHTH AVE, TAURANGA
ZL1UAD BLACKWELL, D M,
ZL1UAF VERZYDE, P J, 8 MARY DREAVER ST, AVONDALE, AUCKLAND 1007
ZL1UAH DODDS, M L E, 17 TE PAKA CRES, KAMO, WHANGAREI
ZL1UAJ JILLINGS, A L, 82C KAWAHA POINT RD, ROTORUA
ZL1UAM CROOK, S A, P.O.BOX 1699, ROTORUA
ZL1UAN AH-CHAN, W R, 54 WYLIE ST, ROTORUA
ZL1UAP JOHNSON, G C, 7/20 BROUGHAM STREET, MT VICTORIA, WELLINGTON 6001
ZL1UAR JOHNSON, 17 Wybourne Road, HAWERA
ZL1UAY OGDEN, I D, 12 LORANGI PL,HILLPARK, MANUREWA, MANUKAU CITY
ZL1UB WILSON, D A, UNIT 1, 35 RANGITOTO TCE, MILFORD, AUCKLAND
ZL1UBB GARDINER, R S A, 5 LINGHAM CRES, TORBAY, AUCKLAND 1310
ZL1UBE EDWARDS, J D, 290 HIGH STREET, DANNEVIRKE
ZL1UBG MILLAR, R C, 9 GILLAM CRES, ROTORUA
ZL1UBJ FINDLAY, D K, 667 MT WELLINGTON HIGHWAY, MT WELLINGTON, AUCKLAND
ZL1UBK BROWN, G A, 16A OCEAN RD, OHOPE
ZL1UBL FALLOON, G A, PO BOX 82-113, HIGHLANDPARK
ZL1UBM WILLIS, B E, 195 TAHAREPA RD, TAUPO
ZL1UBP MEIKLE, B P, 17 RIMUTAKA PLACE, TITIRANGA, AUCKLAND
ZL1UBR RHODES, B A, 17 BELMONT AVE, HAMILTON
ZL1UBU MCCUTCHEON, G L, 29 SECOND AVENUE, JANNALI 2226, NSW
ZL1UBV WITHERS, P G, 31B OTAIKA ROAD, WHANGAREI
ZL1UBY MURPHY, S B, 4 SPINNAKER POINT, LITTLE MANLY, WHANGAPARAOA AUCKLAND
ZL1UBZ GAUDIN, S A, 12 ADA PLACE, FAIRVIEW DOWNS, HAMILTON
ZL1UC DINES, S L, P.O Box 1241, PORTLAND, VICTORIA
ZL1UCA LANG, R G C, 29 ROBERT STREET, ELLERSLIE, AUCKLAND
ZL1UCC BIESEBROEK, J, PO BOX 121, OREWA
ZL1UCF PRICE, C, LAKE OHIA, R D 3, KAITAIA
ZL1UCH HOFFMAN, C, 2B PUNGA STREET, MOUNT EDEN, AUCKLAND 1003
ZL1UCI PAHL, E W T, 17 LANDSCAPE RD, TAURANGA
ZL1UCJ TEVIOTDALE, E A, PO BOX 7051, ROTORUA
ZL1UCQ KIM, C H, PO BOX 1008, ROTORUA
ZL1UCR JOPLING, W F, 24 MAYALL AVENUE, BEACHHAVEN, NORTH SHORE, AUCKLAND
ZL1UCT MEDLAND, J, 12 ARAWA STREET, DINSDALE, HAMILTON
ZL1UCX SMITH, K L, 17 MAKIRI STREET, HELENSVILLE, NORTH AUCKLAND
ZL1UD CASE, A, 8C BRECKONS AVE, HAMILTON
ZL1UDB BRYCE, D W, TE PURU, RD 5, THAMES
ZL1UDE MOREY, E R, 35 ELMWOOD CRES, HAMILTON
ZL1UDF STREIFF, D R, 18 ANZAC AVE, MORRINSVILLE
ZL1UDH HODGKINSON, J R, 450 MANGAWHIO RD, RD 4, TE AWAMUTU
ZL1UDM STANNARD, E A,
ZL1UDN ROWE, S W, 57 VALENTINE ST, PAPAKURA
ZL1UDR MCDONNELL, T R, 44 STEPHENS PLACE, HAIRINI, TAURANGA
ZL1UDV FROGLEY, C D, 22 MELLONS BAY RD, HOWICK
ZL1UDZ GREENMAN, P M, 94 SIM RD, KARAKA, R D 1 PAPAKURA

ZL1UE WILLIAMS, M K, 7 Princess Street Ngaruawahia, Ngaruawahia

ZL1UEC HYNDS, K E, 29A ADAMS LANE, SPRINGLANDS, BLENHEIM 7301
ZL1UED BINGLEY, E R, 45 POWELL ST, AVONDALE, AUCKLAND 1007
ZL1UEF PORTER, J W, 776 MATAKANA VALLEY ROAD, R D 5, WARKWORTH 1240
ZL1UEJ MAINDONALD, P G, PO BOX 702, ROTORUA
ZL1UEK MORECRAFT, I G, 27 GARDEN TCE, PUKEKOHE
ZL1UEL Abraham, Gary, 10 College Street, Edgecumbe
ZL1UEM KILFOYLE, H T, 2393B HUNUA ROAD, R D 3, PAPAKURA 1730
ZL1UEN PETERS, J W,
ZL1UEO ROBINSON, T V, 5 MCKINLEY ROAD, SUNNYVALE, WAITAKERE CITY, AUCKLAND
ZL1UES ROYDS, P I, 1204 CAMERON RD, TAURANGA
ZL1UET SEYMOUR, D J, 2/14 CROMDALE AVENUE, HIGHLAND PARK, HOWICK
ZL1UEU TAYLOR, M L, 805 RIDDELL RD, ST HELIERS, AUCKLAND 1005
ZL1UEV HARRIS, H J, WAIPARERA RD, R D 1, ONERAHI
ZL1UEX COOKE, J B, PO BOX 44-132, PT CHEVALIER, AUCKLAND 2
ZL1UEY VOIGT, R E, 74 STILLWATER CRES, RD 3, SILVERDALE 1462
ZL1UF FORTUNE, D L, PO BOX 82-272, HIGHLAND PARK, AUCKLAND
ZL1UFC WARBURTON, J J, 2 PINE AVE, TAURANGA
ZL1UFE WHITE, D E G, 34 HASELER CRES, HOWICK
ZL1UFG GOODMANSON, P, PO BOX 4, MAUNGATAPERE 0250
ZL1UFN GALLAUGHER, I R, 6 ALF PLACE, HOWICK, AUCKLAND 1705
ZL1UFO ARNET, D A, 66 FITZWILLIAM DRIVE, TORBAY, AUCKLAND 1310
ZL1UFT SHEPHARD, B, PO BOX 23-684, PAPATOETOE, AUCKLAND 1730
ZL1UFW NICHOLLS, G R B, 350 GELLING ROAD, ARARIMU, R D 3 PAPAKURA
ZL1UFY JAMES, T C, PO BOX 100 028, NORTH SHORE MAIL CENTRE, AUCKLAND
ZL1UG REDGRAVE, C I, 48 COVIL AVE, TE ATATU SOUTH, AUCKLAND
ZL1UGF FOWLDS, G F, PO BOX 14-058, TAURANGA
ZL1UGG HEWER, P K,
ZL1UGM MOWRY, A K, 2 JOLLY ST, HAMILTON
ZL1UGO BISHELL, A J F, 28B ELIZABETH STREET, KENSINGTON, WHANGAREI
ZL1UGP HADFIELD, P G, ST KENTIGERN COLLEGE, PO BOX 51 060, PAKURANGA AUCKLAND 1730
ZL1UGS SIGNAL, G R, 4 B TIROHANGA ROAD, R D 1, OPOTIKI
ZL1UGT GULLIVER, K E, 10 VALLEY RD, MT EDEN, AUCKLAND
ZL1UGV SEBIRE, R W, 32 NERI CRES, ROTORUA
ZL1UGZ HANNAH, R T, 275 DON BUCK RD, MASSEY, AUCKLAND
ZL1UHQ SMITH, D J, 156 RANGITOTO RD, PAPATOETOE
ZL1UHR WENDELBORN, L N, 14 GARDEN PLACE, TIKIPUNIGA, WHANGAREI
ZL1UHS WINDRAM, M R, 2 AWANUI ST, BIRKENHEAD, AUCKLAND 1310
ZL1UHT GRIFFIN, M E, 12 VALLEY RD, PUKEKOHE, AUCKLAND 1800
ZL1UHX BRAMMER, P A, 7 CURACAO PLACE, GRENADA VILLAGE, WELLINGTON
ZL1UHZ SUTTON, L M, 207 FERGUSSON DRIVE, THAMES
ZL1UI CARDNO, I M, 5B KELDALE PLACE, FORREST HILL
ZL1UIN HITCHINS, A L, 40 GLEN LYNNE AVE, HAMILTON
ZL1UIO FREW, D J, F3/394 GLOUCESTER ST, TARADALE, NAPIER
ZL1UIS SMILEY, R E, RD 4, PAKIRI BLOCK RD, TOMORATA, WELLSFORD
ZL1UIT PARKINSON, R I, 488 MAHOE ST, TE AWAMUTU
ZL1UIU JENKINS, S E M, 35 ROBERTSON ST, ROTORUA
ZL1UIY STEVENSON, R A, 761 EAST COAST RD, BROWNS BAY
ZL1UIZ BARNETT, N R, 152 EDEN AVE, TE AWAMUTU
ZL1UJ JENNER, K W, 24 QUAIL DRIVE, ALBANY, AUCKLAND 1331
ZL1UJB BEALE, J P, 12 EMERSON ST, TE AROHA
ZL1UJC CORRIGAN, T L, PO BOX 40-135, GLENFIELD, AUCKLAND 1330
ZL1UJG MURPHY, K L G, 8 TAMAR PLACE, NAWTON, HAMILTON
ZL1UJK GRIFFIN, W P, 15 LINE RD, GLEN INNES, AUCKLAND 6
ZL1UJO CRANNA-POWELL, A W, C/O POSTAL DELIVERY CENTRE, PUHOI
ZL1UJP COBB, R P, 8 BEAUBANK RD, KELSTON
ZL1UJS FERGUSON, K D, P O B OX 3526, SHORTLAND STREET, AUCKLAND CITY
ZL1UJV HAYES, L T, 161 WHANGAPARAOA RD, OREWA
ZL1UJW HAIGH, C B, 12 KAURI RD, ORATIA, AUCKLAND 7
ZL1UK BEECH, S C, 113A PUPUKE RD, BIRKENHEAD, AUCKLAND
ZL1UKB HAYES, G M, 161 WHANGAPARAOA RD, OREWA, AUCKLAND 1463
ZL1UKC NICHOLSON, R, 27 DAWSON DRIVE, NGONGOTAHA, ROTORUA
ZL1UKD WOODFIELD, S T, 9-A REWI RD, ROYAL OAK, AUCKLAND 1003
ZL1UKE HALLIWELL, P W, 77A TARGET RD, GLENFIELD, AUCKLAND 10
ZL1UKG LOVERIDGE, P R, 5 MOSTYN ST, KINGSLAND
ZL1UKL MCLEAN, A K,
ZL1UKO NGAKURU, D, PO BOX 278, KAIKOHE
ZL1UKP MCCAFFERTY, W M, 23 DUDDING AVE, NORTHCOTE, AUCKLAND 1309
ZL1UKR ARLIDGE, D V, PO BOX 29 228, GREENWOODS CORNER, AUCKLAND 1030
ZL1UKS COTTLE, K J, 96 ALEXANDER ROAD, RAUMATI, KAPITI COAST
ZL1UKT DANCY, N K, 23 DELHI CRES, KHANDALLAH, WELLINGTON
ZL1UL GILMORE, G H, 82 GILMORE RD, TUHIKARAMEA RD 10, HAMILTON
ZL1ULA MALONEY, M J, PO BOX 627, AUCKLAND MAIL CENTRE
ZL1ULC ARMSTRONG, D J,
ZL1ULF MORRIS, D G, 3 ELSTREE AVE, GLENN INNES, AUCKLAND
ZL1ULH WADHAM, P L, 891 WHANGAPARAOA ROAD, LITTLE MANLY, WHANGAPARAOA
ZL1ULK GRIFFIN, D G, 12 VALLEY RD, PUKEKOHE
ZL1ULL JULIAN, R E,
ZL1ULN GOODE, D B, 40 RIVERPARK CRES, HENDERSON
ZL1ULR SHEFFORD, D W,
ZL1ULS DUNCAN, R, 173 TAHAREPA RD, TAUPO
ZL1ULT OLLIFF, G M, 2/7 TAHURI ROAD, EPSOM, AUCKLAND 1003
ZL1ULX RASMUSSEN, K S,
ZL1ULY GLOVER, S D, C/O STEVE'S MARINE, 18 CROSS RD, TAURANGA
ZL1UMC TWENTYMAN, I R, 1/68 HASELER CRES, HOWICK
ZL1UMG WALLACE, L G, 14 ACACIA CRES, GLENVIEW, HAMILTON
ZL1UMH MILNES, F S, PO BOX 205, TOKOROA 2392
ZL1UMJ ALLEN, E L, 452 PT CHEVALIER RD, PT CHEVALIER, AUCKLAND 2
ZL1UMK HOWIE, M H, 2/6 ALIFORD AVENUE, ORANGA, AUCKLAND
ZL1UML HARLAND, W R, 8 ROMILLY COURT, PAPAKURA
ZL1UMN BARNETT, E W, 152 EDEN AVE, TE AWAMUTU
ZL1UMP EDGE, W B, PO BOX 125, KAIKOHE
ZL1UMV MACKAY, T D, 27 LEWIS STREET, INVERCARGILL
ZL1UMW GRAHAM, L R, UNIT 1, 4 NEWHAVEN ST, ELLERSLIE, AUCKLAND 5
ZL1UMX VAN VEEN, E F, 21 TAONUI ST, PAPAKURA, AUCKLAND
ZL1UMY SHON, Y J, 162 GLAMORGAN DRIVE, TORBAY, AUCKLAND 1310
ZL1UND JOWITT, R, PO BOX 497, PAPAKURA, AUCKLAND 1730
ZL1UNH Lawrence, Anton, 108 Glendale road, Glen Eden, Auckland
ZL1UNI SMITH, S R, COULSTONS RD, R D 2, PUKEKOHE
ZL1UNS BELL, K, PO BOX 250, ALBANY VILLAGE, AUCKLAND
ZL1UOJ KILGOUR, D A,
ZL1UOM JANE, M I, 27 KING ST, WAIUKU
ZL1UON LUNENBURG, P C, 5-B BRIGHTS RD, CENTRAL PARK, WAIUKU 1852
ZL1UOP SCHULTZ, T F, SCHULTZ RD, WAIPU
ZL1UOU TOTTENHAM, R D, 49 WESTERHAM DRIVE, HOWICK, AUCKLAND 1705
ZL1UOV BAINE, M J, PO BOX 1, BROADWOOD
ZL1UOW WELLS, E L, WHITE PINE BUSH, RD 2, WHAKATANE 3080
ZL1UPB WELLS, 17 ORCHARD EAST ROAD, NGATEA, NGATEA
ZL1UPJ JONASSEN, P W,
ZL1UPN NIELSEN, P C, 187 KIRIPAKA ROAD, TIKIPUNGA, WHANGAREI
ZL1UPO MOORE, H J, C/O 57 COLLEGE RD, ST JOHNS, AUCKLAND 1005
ZL1UPR RIDDICK, P J, 13 STIRLING ST, REMUERA, AUCKLAND 5
ZL1UPS SCOT, P A, 9 KOKICH CRES, ONERAHI, WHANGAREI
ZL1UPT DONNELLY, S F, 9E CAMERON ROAD, HAMILTON
ZL1UPX MCCANN, K M, 52 CAMPBELL ST, TAUMARUNUI
ZL1UPY GUTMANN, P C, 24 DURNESS PLACE, OREWA, AUCKLAND
ZL1UQE COLLIS, M V, PARK ROAD, R D 3, WAIUKU
ZL1UQI TAYLOR, R J, 70 OCEAN RD, PARAPARAUMU BEACH
ZL1UQJ REINHARD, P A, PO BOX 301, MANGONUI, MANGONUI 0557
ZL1UQN GORTER, T A, 47 BLACKWELL DVE, TRYPHENA, GREAT BARRIER ISLAND
ZL1UQO PRICE, E M, Tymana, R D 3, KAITAIA 0483
ZL1UQW WHARTON-ALLEN, R J, 13A SELWYN ROAD, LINMORE, ROTORUA
ZL1URM YOUNG, W R, 81A ARTHUR ST, ONEHUNGA, AUCKLAND
ZL1URU COPPELL, J M, 128A JAMES ST, WHAKATANE
ZL1URX HODGSON, A J, PO BOX 240, WHANGAMATA
ZL1US ARMSTRONG, M A S, 77 QUEEN ST, PUKEKOHE
ZL1USE SOPP, T G, 19 TAWHARA PLACE, EDGECUMBE
ZL1USG NETTLEINGHAM, P, MATAHUI RD, RD 2, KATIKATI
ZL1UT STILL, W J, 14 MEADOWBANK ROAD, MEADOWBANK, AUCKLAND 1005

ZL1UTC CACCIAMANI, T, 2 HORSESHOE BUSH RD, DAIRY FLAT R D 4, ALBANY AUCKLAND 1331
ZL1UTH HARDISTY, T R, 293 TAUPO RD, TAUMARUNUI
ZL1UTS GREY, D G, 4 ANICH STREET, MASSEY, WAITAKERE CITY, AUCKLAND
ZL1UTW SIMMONDS, R N, 44 ROTOKAWA ST, TAUPO
ZL1UU TWADELL, A S, 7 PRINCE REGENT DRIVE, PAKURANGA, AUCKLAND
ZL1UUD GRIMMER, S, F2/18 SCARLOCK AVE, BROWNS BAY, AUCKLAND
ZL1UUK RAMSEY-TURNER, R, 3/55B RAUTAWHIRI ROAD, HELENSVILLE, AUCKLAND 1250
ZL1UUN MCGOWAN, R A, APARTMENT 55, THE AVENUES RETIREMENT RESORT, 10TH AVENUE TAURANGA
ZL1UV MORCH, J H, PO BOX 36418, BIRKENHEAD, AUCKLAND 1310
ZL1UVG BOND, A M J, PO BOX 195, WAUITU
ZL1UVI BARNETT, L E S, 48 WIHONGI ST, KAIKOHE
ZL1UVO TILLEY, J W, PO BOX 585, OPOTIKI
ZL1UW TINSLEY, H G, 18 GRANDVIEW RD, HAMILTON
ZL1UWH JACKSON, C W, 159 BRIDGE ST, OPOTIKI
ZL1UWL JOHNSON, I H,
ZL1UWZ READ, J J, 127A, RAYNER RD, HUNTLY
ZL1UX HAMILTON AMATEUR RADIO CLUB (INC), PO BOX 606, HAMILTON
ZL1UXA LAMBERTON, J J, 105 Arrowsmith Road, Waitakere, AUCKLAND
ZL1UXL ROBERTS, W S, 16 BRIGHTON RD, WAIHI BEACH
ZL1UXO POSEL, W W, 24A PARAU STREET, THREE KINGS, AUCKLAND
ZL1UXR ELTRINGHAM, R J, 121 FARQUHAR RD, GLENDENE, WAITAKERE CITY 1208
ZL1UY DOWNARD, T V E, 13 RIVERLEA DRIVE, KATIKATI
ZL1UYB ANDERSEN, H L C, PO BOX 17-211, GREENLANE, AUCKLAND
ZL1UYJ DOUGLAS, G A M, 9 WILLIAMS CRES, PT WELLS, R D 6 WARKWORTH 1241
ZL1UYW PAYNE, C R, RD4, OHINEWAI, WAIKATO
ZL1UYZ PHILLIPS, D S M, PO BOX 36, WAIHI BEACH
ZL1UZ TRUMAN, A R, UNIT 1/24 TE MATA RD, HAVELOCK NORTH 4201
ZL1UZG SMITH, L A, 11 TOTANGI RD, NGATAPA, R D 2, GISBORNE
ZL1UZJ GRAHAM, J M, 18 SEAWAY TCE, TAURANGA
ZL1UZM SCHINDLER, W H, UNIT 3/18 MONTMERE AVE, TE ATATU PENINSULA, AUCKLAND 1008
ZL1UZU AKROYD, L T, 4 TOLDEO AVENUE, WESTERN HEIGHTS, WAITAKERE 1002, AUCKLAND
ZL1UZY HARTLEY, N A,
ZL1VA SEARS, V C A, 11 RODERICK ST, TAURANGA
ZL1VAH HOPKINS, A, 432 WHANGAPARAOA ROAD,, WHANGAPARAOA
ZL1VAK KING, A B,
ZL1VAN ADRIAN, I A, 37 PUKETARATA ROAD, RD 4, OTOROHANGA
ZL1VAT RICHARDS, P E, 16 TEROU ST, MANAIA
ZL1VB JONES, R C, PO BOX 111, OKAIHAU 0455
ZL1VBI PARRANT, D, 5 SMITH STREET, KAIAPOI, NORTH CANTERBURY
ZL1VBN ALLEN, D G, PO BOX 15, BUKA, NSP
ZL1VBR GATES, L J, 30 HOBSON ST, KAWERAU
ZL1VBT MITCHELL, J D, 12 A MERSEY PLACE, NEW WINDSOR, AUCKLAND
ZL1VBW LIDDLE, Y D M, 3 HINEMOTU AVE, KAWERAU
ZL1VCB BALE, C W, 66 VALLEY ROAD, HIKURANGI, WHANGAREI
ZL1VCC HILL, R A, 48 Icarus Place, ROTORUA
ZL1VCJ JAQUES, C N,
ZL1VCR ASPINALL, N B, 42 OWAIKURA ROAD, RD 3, OTOROHANGA 2564
ZL1VD CUTLER, J L, 87 REALM DRIVE, PARAPARAUMU 6010
ZL1VDB BOYES, D G, PO BOX 48, MANGONUI
ZL1VDF FOSTER, D M, 12A FAIRVIEW RD, MANUREWA, PAPATOETOE
ZL1VDN NEL, D, 16 MILSON DRIVE, OAKLANDS, PAPAKURA, AUCKLAND
ZL1VEY HARVEY, N M, R D 4, PUKEKOHE, AUCKLAND
ZL1VF MOLLER, L J, 228 DOBSON ST, ASHBURTON
ZL1VFO POPLE, I O,
ZL1VFW WHITE, F W, 150 PAHOIA RD, C/O BETHLEHEM PO, TAURANGA
ZL1VG BICHENO, M C, 100 WOODBAY RD, NEW LYNN
ZL1VGC CONROY, G J, 36 COLLIE STREET, MANUREWA, AUCKLAND
ZL1VGL LEONG, G, NEWSTEAD, RD 4, HAMILTON
ZL1VH SANNE, J H, 49 CAMERON RD, HAMILTON
ZL1VHS SOLE, H A, KAIPARA HILLS RD, RD4, WARKWORTH 1241
ZL1VIM MARTIN, D W, PO BOX 55-095, MISSION BAY, AUCKLAND 5
ZL1VJ SOMERVILLE-RYAN, R, 13 CARR STREET, KAMO, WHANGAREI
ZL1VJB BUSCH, J M, PO BOX 372, WARKWORTH, AUCKLAND 1241
ZL1VJP PATEL, J N, 57 BURBANK AVE, MANUREWA, AUCKLAND
ZL1VJT TUCKER, J R, PO BOX 4525, MT MAUNGANUI
ZL1VK PAPAKURA RADIO CLUB INC, PO BOX 72 397, PAPAKURA 1730
ZL1VKG MOATES, C R, PO BOX 102, MAUNGATAPERE
ZL1VL LEAR, V C, 19 FIELDSTONE COURT, HOWICK, AUCKLAND 1705
ZL1VLD DOEL, L D, 21 LISSLETON DRIVE, DANNEMORA, MANUKAU CITY 1701
ZL1VM ARNOLD, R R, 21 SEAVIEW RD, MILFORD
ZL1VMA ARMOUR, M H, 34 ENNIS AVE, PAKURANGA, AUCKLAND
ZL1VMF FOSTER, M S, P O BOX 1245156, WATERLOO, LOWER HUTT
ZL1VMG GILBERT, M S, C/O 25 BAY VIEW RD, RAGLAN 2051
ZL1VMH HALLAGER, J M, P O BOX 7000, WELLESLEY STREET, AUCKLAND
ZL1VML LEE, M J, 7/8 BOTANY ROAD, HOWICK, AUCKLAND
ZL1VMP PHIPPS, M J, 11 IDESIA PLACE, TOTARA HEIGHTS, MANAKAU CITY
ZL1VN Willis, Alexander James, 68 The Drive, Brookfield
ZL1VNR ROBERTS, N W, 7 NAN PLACE, PAKURANGA, AUCKLAND 1706
ZL1VOJ MCEWEN, J, 37 PUKITARATA ROAD, RD 4, OTOROHANGA
ZL1VOT HART, S J, 1A LYNMORE DRIVE, MANUREWA, AUCKLAND
ZL1VP PEMBERTON, V A, 161 CHURCH STREET, ONERAHI, WHANGAREI
ZL1VPB BUSCH, P N, 1135A WHANGAPARAOA ROAD, HOBBS BAY, WHANGAPARAOA, AUCKLAND 1463
ZL1VPG GARLICK, P N, 1 HERNE BAY ROAD, HERNE BAY, AUCKLAND 1002
ZL1VPJ JARMAN, P J, 17 CORRIN ST, HAMILTON
ZL1VPS SOLE, P W, KAIPARA HILLS RD, R D 4, WARKWORTH 1241
ZL1VQ COPPARD, E T, 11 CHRISTENSEN ST, WAIHI
ZL1VR GILLIGAN, C R, 4 LAMBERT ST, ABBOTSFORD, GREEN ISLAND 9006
ZL1VRA ARMSTRONG, R C, 34 HOUCHENS ROAD, GLENVIEW, HAMILTON
ZL1VRR REDDELL, R W, 394B MT ALBERT RD, MT ROSKILL, AUCKLAND 4
ZL1VS DEVERALL, W H, 24A RIMU STREET, WAIKANAE 6010
ZL1VSF CROOKES, A J, 7 LORELEI PLACE, PAPAKURA, AUCKLAND 1703
ZL1VSG GURR, S R, C/O 3 BRIGHTSIDE RD, WHANGAPAROA, AUCKLAND 1463
ZL1VST WOODFIELD, K D, 9-A REWI RD, ROYAL OAK, AUCKLAND 1003
ZL1VTC CRON, P B, 157C NIXON STREET, HAMILTON
ZL1VTF FRANGOS, T, 17 BELLMONT AVE, HAMILTON
ZL1VV STOBBE, V, 23 Albert Street, Riverhead, Auckland
ZL1VWM MUZYKA, V, 33A-33 VERMONT ST, PONSONBY, AUCKLAND 1002
ZL1VX BOYD, R, 14 DUNDAS ST, WHITIANGA
ZL1VXH HEDAYATI, S, 3/214 CARRINGTON ROAD, MT ALBERT, AUCKLAND
ZL1WA WILLS, A E, 14A GRAHAM ST, PUKEKOHE, AUCKLAND 1800
ZL1WAA HARROP, P G, 6 WAINGARO RD, NGARUAWAHIA
ZL1WAG NIXON, L M, 10 PETER BUCK ROAD, AVONDALE, AUCKLAND 1007
ZL1WAJ JONKER, W A, 17 KINNARD LANE, RD 1, PAPATOETOE, AUCKLAND
ZL1WAM TOWNSON, W R, 3 POINT ST, NAHURANGI EAST, WARKWORTH
ZL1WAR GRAY, D A, 419 Kaitangata Highway, R D 1, Kaitangata
ZL1WAT PERCIVAL, M D, 32 TAMMADGE ST, TE KUITI 2500
ZL1WB ROWLINGS, B H, 22 TAINUI ST, ONERAHI, WHANGAREI
ZL1WBZ WILSON, N R, 3 MAGDALEN PLACE, WESTHARBOUR, AUCKLAND
ZL1WC CRAMOND, W E H, 74 WAIKAKA RD, R D 1, MATIERE 2652
ZL1WCJ JOHNSON, C A, PO BOX 60-202, TITIRANGI, AUCKLAND
ZL1WD WADHAM, D R A, 891 WHANGAPARAOA ROAD, LITTLE MANLY, WHANGAPARAOA
ZL1WDZ ZIEGLER, D A, 6 BROUDER PLACE, MANUREWA, AUCKLAND
ZL1WE EDLIN, W F, P O BOX 72-495, PAPAKURA, AUCKLAND
ZL1WEN CLARKE, A S, 158 ROYAL RD, MASSEY, AUCKLAND 1008
ZL1WER SHAW, D S, 19 GORDON RD, MT MAUNGANUI
ZL1WET JACKSON, A D, PO BOX 10-300, HAMILTON
ZL1WFD JONES, Y N, PO BOX 111, OKAIHAU
ZL1WG BORIC, H V, 27 CLEARY RD, PANMURE
ZL1WGA ADDISON, G A, 99 RICHMOND AVE, TOKOROA
ZL1WGB BISHOP, W G, P O BOX 281, WHANGAREI
ZL1WGL LANDON, J G, PO BOX 228, PUKEKOHE, AUCKLAND 1800
ZL1WH COE, P H, 21 MARSHALL AVE, TAUPO
ZL1WHL LEINWAND, H I, 73 TENDER RD, DAIRYFLAT, RD4 ALBANY 1331
ZL1WI MILAM, R E, 3 BUSH RD, ORATIA, AUCKLAND 1007

ZL2 CALL-SIGNS

ZL2AA GISBORNE AMATEUR RADIO CLUB INC, PO BOX 1017, GISBORNE
ZL2AAA WHITE, M C, 502 HUIA ST, HASTINGS
ZL2AAC BRIDGMAN, A H S, 261 MITCHELL ST, WELLINGTON
ZL2AAH SAYERS, R K F, 33 BAMBER ST, CASTLECLIFF, WANGANUI
ZL2AAJ DAVIS, S B, 8 KAWAU PLACE, WANGANUI
ZL2AAN THOMPSON, R N, 1010 GORDON RD, HASTINGS
ZL2AAO SHACKEL, M W O, C/O POST OFFICE, OPUA
ZL2AAQ JEFFERS, R J, 55A JELLICOE ST, WANGANUI
ZL2AAT NICOLL, R J, 25 SELWYN STREET, WITHER RISE, BLENHEIM 7301
ZL2AB NEW PLYMOUTH AMATEUR RADIO CLUB, C/O T.E.M.O., 45 ROBE ST, NEW PLYMOUTH
ZL2ABB CAMPBELL, S H, 20 ERIN ST, PALMERSTON NORTH
ZL2ABC PACKER, B A, 10 PATNA STREET, NGAIO, WELLINGTON
ZL2ABJ BRIDGER, A, 11 MAWSON ST, GRACEFIELD, LOWER HUTT
ZL2ABL BRAMLEY, K J, 14 REMBRANDT AVE, LINDEN
ZL2ABM ELVY, D L, 7 NORWICH ST, WELLINGTON 5
ZL2ABN RIDDING, G B,
ZL2ABS TONG, J, 5 NESTON GROVE, CHURTON PARK, WELLINGTON
ZL2ABT TURNER, O D, CADMAN RD, DANNEVIRKE
ZL2ABU VAN DER BURGH, J E C, 4a Trinity Place, Paraparaumu Beach
ZL2ABV MARSHALL, L, 5 RAGLAN AVE, PALMERSTON NORTH
ZL2ABW STEER, D W, 168 MOLESWORTH STREET, NEW PLYMOUTH 4601
ZL2ABY HUGGARD, J D, 22A RIMU ST, NEW PLYMOUTH
ZL2ABZ MOORE, J A W, 112B BRITOMART ST, BERHAMPORE, WELLINGTON 6002
ZL2AC TURNBULL, P, 56 PLUMMERS POINT ROAD, RD 2, TAURANGA
ZL2ACA BARNETT, W J, RD 1, MAPUA, UPPER MOUTERE
ZL2ACC COMRIE, A, 92-94 Revans Street, Featherston, South Wairarapa
ZL2ACE GREENE, R P, 5 ARANUI AVE, CASTLECLIFF, WANGANUI
ZL2ACF VICTOR STAGPOOLE, 49 BOULD ST, WELLINGTON
ZL2ACG Goldie, Andrew, 50 Kenmore street, Newlands
ZL2ACJ JONES, C M, 1 KENNY AVENUE, AHURIRI, NAPIER
ZL2ACL MYHILL, J, 63 DEEPDALE ST, BURNSIDE, CHRISTCHURCH
ZL2ACN LAKEMAN, D T, 5 COSTLEY STREET, MASTERTON 5901
ZL2ACO JEFFS, D E, 14 FREYBERG CRES, WAIKANAE
ZL2ACT SMITH, G F, 26 SHERIDAN CRES, UPPER HUTT 6007
ZL2ACW GOTLIEB, R, 10 ASHTON FITCHETT DRIVE, BROOKLYN, WELLINGTON
ZL2AD CONROY, T R, 21A WELD STREET, BLENHEIM
ZL2ADB BARROW, G W B, 60 BLEDISLOE CRES, WAINUIOMATA
ZL2ADK PURDIE, C M, 65 HEDGES ST, SANSON 5450
ZL2ADL PURDIE, B E, 65 HEDGES ST, SANSON 5450
ZL2ADM SMITH, I G, HILLVIEW, 94 GUPPY RD, GREENMEADOWS, NAPIER
ZL2ADN STUART, J D, 11 KIPLING ST, PALMERSTON NORTH
ZL2ADO WILKINSON, J, 69A PARK RD, CARTERTON
ZL2ADP VILE, M E, 8A WILLOW GROVE, UPPER HUTT
ZL2ADR MCINTYRE, A, 1407 HIGH STREET, POMARE, LOWER HUTT
ZL2ADU GORTON, H J, 30 DIEFFENBACH ST, OPUNAKE
ZL2ADW WEST, J D,
ZL2ADY GALLAGHER, B G, 5 GEORGE ST, DANNEVIRKE
ZL2AE SOLE, A, 87 VEALE ROAD, RD1, NEW PLYMOUTH
ZL2AEB BOWRING, A E, 69 WAKEFIELD STREET, WANGANUI EAST, WANGANUI
ZL2AEL LOCKE, A E, 27 REGENT DRIVE, PARAPARAUMU
ZL2AEM ROBINSON, P H, 10B BARRIBALL ST, NEW PLYMOUTH
ZL2AF JENKINS, I J, 35 OAK AVE, PAREMATA 6006
ZL2AFC BURR, M K, 48 HOLBORN DRIVE, STOKES VALLEY
ZL2AFE CLARKSON, R J, 247 HIGH STREET, ELTHAM
ZL2AFI NICHOLLS, G A, 16A COLLINGWOOD ST, PALMERSTON NORTH
ZL2AFJ NICHOLLS, 6 MUDGWAY PLACE, PALMERSTON NORTH
ZL2AFK FORD, P L, 34 AKATEA RD, KOROKORO, LOWER HUTT
ZL2AFL JORDAN, N, CASA LOMA, WESTERN HUTT RD, MELLING, LOWER HUTT
ZL2AFM HAWKE, P D, PO BOX 2002, STOKE, NELSON
ZL2AFN MACLEAN, A K, PO BOX 59, RAETIHI
ZL2AFP WASSILIEFF, C, 69 TIBER ST, WELLINGTON
ZL2AFR GORMAN, B D, 66 PACIFIC ST, TIMARU
ZL2AFT ANDERSON, B P, 429 ALBERT ST, PALMERSTON NORTH
ZL2AFU UDY, H A F, 1 TUDOR RD, PAHIATUA
ZL2AFV TITAHI BAY AMATEUR RADIO CLUB INC, PO BOX 50-402, PORIRUA 6215
ZL2AFW JONES, B N, 23 MITCHELL STREET, ARAMOHO, WANGANUI
ZL2AG NEWLANDS, R G, 14 VASANTA AVENUE, NGAIO, WELLINGTON 6004
ZL2AGC WALDMANN, K J, PO BOX 47-047, UPPER HUTT
ZL2AGD HAWKINS, W, 20 GILRAY AVENUE, MARAENUI, NAPIER
ZL2AGH MARSHALL, A W, 32 PLYMOUTH RD, HASTINGS
ZL2AGI GILES, F A, 1006 SUSSEX ST, HASTINGS
ZL2AGK KING, A G, 42 NORBITON ROAD, FOXTON 5551
ZL2AGM WEAVER, D B,
ZL2AGO WOLF, J M, 12 CELESTE PLACE, GLENFIELD, AUCKLAND 10
ZL2AGS GOTLIEB, G D, 10 ASHTON FITCHETT DRIVE, PANORAMA HEIGHTS, BROOKLYN WELLINGTON
ZL2AGU STEEL, G J, 674 KOWHAI DRIVE, TE KOUMA, COROMANDEL
ZL2AGW GILLON, K R, 11 FARNSWOOD PLACE, REDWOOD, CHRISTCHURCH
ZL2AGY MARR, A H, PO BOX 3, GREYTOWN
ZL2AH REED, W S J, 7A HUMPHREY STREET, MARTON
ZL2AHA WARDS, I J, RD 2, MANUTAHI, PATEA
ZL2AHB DOUGLAS, L S, 9 SWITHLAND PLACE, CHRISTCHURCH 8004
ZL2AHE WILSON, A J, 7 PICKET BOAT LANE, WHITBY, PORIRUA 6006
ZL2AHH KEONG, P W, PO BOX 8108, HAVELOCK NORTH
ZL2AHI MEADS, A M, 23 DARWIN CRESCENT, NEW PLYMOUTH
ZL2AHM SMITH, R A, 121 SLACKS RD, PALMERSTON NORTH
ZL2AHO OWEN, D W, 12 Golders Road, Upper Hutt
ZL2AHR HAWTREE, G R, 50 FOX RD, WANGANUI
ZL2AHU O'HARA, E R, 8 MILLER PLACE, MASTERTON
ZL2AHY HOWARD, C B, 24B CLEARMONT CRES, NEW PLYMOUTH
ZL2AI PERT, P E, 29 RENOLDS DRIVE, GLENVIEW, HAMILTON
ZL2AIA STEELE, R, 7 MARMON STREET, RAWENE PDS
ZL2AIB CAMPBELL, W A, 225A TUKAPA ST, NEW PLYMOUTH
ZL2AID WILLIAMS, P R, 126 FAIRFIELD RD, HAWERA
ZL2AIE PARKER, W J,
ZL2AIJ NEWBERY, M D, 35 CROFTON RD, WELLINGTON
ZL2AIK SMYTH, W M, 49C DORALTO RD, NEW PLYMOUTH
ZL2AIL MCMANAWAY, P H, MOFFAT RD, RD 1, MATARAWA, CARTERTON
ZL2AIN JAMES, L A, 110 REDWOOD STREET, BLENHEIM
ZL2AIO VOSS, R B, RD 6, MILL RD, PALMERSTON NORTH
ZL2AIR MORRIS, S W, MAIN HWAY, CLAREVILLE, CARTERTON
ZL2AIS CRAMER, F H, 34 JAMES ST, INGLEWOOD
ZL2AIT WHITING, P C, 5 WAKELY ROAD, NEWLANDS, WELLINGTON
ZL2AIU JEPSEN, N, P O BOX 1904, PALMERSTON NORTH
ZL2AIX GEMMELL, A F, 482 CHILDERS RD, GISBORNE
ZL2AIY HUNTER, D R, 16 TORLESSE STREET, WAKATU, NELSON
ZL2AJ HARRIS, W, 114 AUPAKI ROAD, RD11, HASTINGS
ZL2AJA PLUM, B F, 6 PORRIT PLACE, STOKE, NELSON
ZL2AJB HODGE, L D, 23 KENT CRES, PALMERSTON NORTH
ZL2AJC HULSE, R L, 2 JUNCTION STREET, EPUNI, LOWER HUTT 6009
ZL2AJF VERNON, J H, 130 MAIRANGI RD, WELLINGTON
ZL2AJG GIBLIN, A G, 27 WEST AVENUE, RICHMOND
ZL2AJH ANDREWES, L M, PO BOX 10-575, THE TERRACE, WELLINGTON 6036
ZL2AJJ MCHARDY, R A, 147A KINGS ROAD, MAKAURI, RD 1, GISBORNE
ZL2AJM DONOVAN, MICHAEL, 370 ESTUARY ROAD, NEW BRIGHTON, CHRISTCHURCH
ZL2AJR TEWARD, G J, 26 HOROPITO RD, WAIKANAE
ZL2AJV SMALL, I R, 60 WHAKAIPO AVE, TAUPO
ZL2AJZ MASSEY UNIVERSITY (ELECTRONICS), PRIVATE BOX 756, WELLINGTON
ZL2AK ROWSON, L T, 21 KELLYVILLE HEIGHTS, NEW PLYMOUTH
ZL2AKC LARKIN, J F, 24 SURREY RD, WANGANUI
ZL2AKE WATSON, M B, 25 ARMAGH TCE, MARTON
ZL2AKF PEFFERS, W F, SPADE OAK VINEYARD, MAIN RD MAKAURI, RD1 GISBORNE
ZL2AKK MOSS, J B, 9 SEYTON ST, STRATFORD
ZL2AKL MULCAHY, A F,
ZL2AKM GLASSEY, R B, 63 NORTHCOTE ROAD, CHRISTCHURCH 8005
ZL2AKN SMITH, L K, PO BOX 1119, TAURANGA
ZL2AKS TAYLOR, D, 31 AHURIRI ST, WELLINGTON
ZL2AKT BUNDLE, R J, PO BOX 28, BULLS 5452
ZL2AKU CROSBY, B D, 28 SHERIDAN CRES, UPPER HUTT
ZL2AKV COPELAND, R N, 11 TE PUNI GROVE, UPPER HUTT
ZL2AKW KING, T C, 72 CHELMSFORD ST, WELLINGTON
ZL2AKZ BARDEN, T W A, 14 PURIRI PLACE, KAITAIA 0500
ZL2AL JENNINGS, L F, 203 BERESFORD ST, HASTINGS 4201
ZL2ALA KENNY, A R, 60 POKOHIWI RD, LOWER HUTT
ZL2ALC MAXWELL, H J, 52B AWATEA AVENUE, PARAPARAUMU 6010
ZL2ALD GILLESPIE, M E, PO BOX 667, PAPAKURA, AUCKLAND
ZL2ALJ FLETCHER, A B, 127 MELBOURNE RD, ISLAND BAY, WELLINGTON 6002
ZL2ALL TOMPKINS, A W, HALCOMBE RD, R D 5, FEILDING

ZL2ALM LOVEGROVE, P J, 145 CARLISLE RD, BROWNS BAY
ZL2ALO SHEARMAN, A J, 12 SOMERSET RD, SPRINGVALE, WANGANUI
ZL2ALP PATON, P J, 41 HYDE ST, WAINUIOMATA 6008
ZL2ALQ PHILLIPS, D R,
ZL2ALR JURY, J M, GLENDOWER, PONATAHI RD, RD 2, CARTERTON
ZL2ALT TONG, A C, 12 PRINCES ST, HAWERA 4800
ZL2ALW BARNETT, A D, 70 WAIMA CRES, TITIRANGI, AUCKLAND 1007
ZL2ALX TARRANT, G W, RAWHITRUA, RD 8, MASTERTON
ZL2ALY WALKER, C M, 244A TE MOANA ROAD, WAIKANAE 6010
ZL2ALZ HEALEY, G W, 78 SIDLAW ST, WELLINGTON
ZL2AM GREAVES, I G, 20 PARKVIEW AVENUE, FEILDING
ZL2AMA DWYER, M B, PO BOX 7313, WELLINGTON SOUTH
ZL2AMC SARGENT, F W, 2125A GORDONTON ROAD, RD 1, TAUPIRI 2171
ZL2AMD LAMONT, D H, 510 KENNEDY RD, NAPIER
ZL2AME HEATH, C A, 9 PATUTU GROVE, UPPER HUTT
ZL2AMI STEWART, R G, 105 ORANGI KAUPAPA RD, WELLINGTON 6005
ZL2AMJ JOHNSON, J F C, 15 FIELD ST, UPPER HUTT
ZL2AMK VENDT, G R, 60 BIRD GROVE, STOKES VALLEY
ZL2AMM MORRIS, S J, 1 SIDLAW ST, WELLINGTON
ZL2AMO SPACKMAN, M L, UNIT 3/421 GLOUCESTER ST (ATAWHAI), TARADALE, NAPIER
ZL2AMP SUTHERLAND, H, 111 QUEENS ROAD, WAIKANAE
ZL2AMR FEILDING & DISTRICTS RADIO CLUB, C/O MS PRIOR, 7 KEITH ELLIOTT STREET, FEILDING
ZL2AMS MARTON BRANCH NZART, C/O TRUSTEE: MR T F RUBERY, PO BOX 279, MARTON 5460
ZL2AMT GARMONSWAY, T L, RANGIWAEA, RD 1, TAIHAPE
ZL2AMZ HUMPHRIS, G J, 24 WOODHEIGH MEWS, PARAPARAUMU BEACH
ZL2AN SHEPHERD, ERIC, 293 FENTON STREET, ROTORUA
ZL2ANB FENTON, D J, 27 BLAKE ST, WAITARA
ZL2ANG TIPLER, B F, PO BOX 400, STRATFORD
ZL2ANI MCLEOD, S A, 4 TREVELYAN ST, NAPIER
ZL2ANN OPUNAKE RADIO CLUB, INC RAHOTU BRANCH NZART, 30 DIEFFENBACH ST, OPUNAKE
ZL2ANP WILLIAMSON, J J, SINCLAIRS RD, RD 9, FEILDING
ZL2ANQ KEANE, P M, PO BOX 1151, GISBORNE
ZL2ANS MARTIN, D W, 111 AVENUE RD, GREENMEADOWS, NAPIER
ZL2AOA WALL, T F, MAHAKI, RD 1, MARTINBOROUGH
ZL2AOC VAN TOORENBURG, LAMMERS L M, 29 MAREWA RD, HAITAITAI, WELLINGTON 6004
ZL2AOH SUTTON, R L, 12C HERBERT GARDENS, 186 THE TERRACE, WELLINGTON 6001
ZL2AOI MALKIN, E, 4/412 AVENUE RD WEST, HASTINGS
ZL2AOK WALLIS, G A, 6 BRUCE AVE, BROOKLYN, WELLINGTON
ZL2AON DAVIES, G, 25 MARINE STREET, HOKOWHITU, PALMERSTON NORTH
ZL2AOO SINCLAIR, M L, 1 PORRITT PLACE, TAMATEA, NAPIER
ZL2AOP MACKINTOSH, A B, 34 MARIAN DRIVE, GISBORNE
ZL2AOT SANDERS, K D, FLAT 6, 40 HIGH STREET, RENWICK, MARLBOROUGH 7352
ZL2AOU HOWAN, V E, 7 ALMORA VIEW, ASCOT PARK, PORIRUA
ZL2AOV MCNEILL, D A, 58 FRASER AVE, JOHNSONVILLE, WELLINGTON 6004
ZL2AOX EDWARDS, M R,
ZL2AOZ DAVIDSON, W E, RD 10, PALMERSTON NORTH
ZL2AP DE GREEUW, J F M, 12 GRANGE RD SOUTH, HAUMOANA 4250
ZL2APA CHIPPENDALE, J G, 66 REID AVE, HAWERA
ZL2APC BURTON, H, 3 CHAMBERLAIN ROAD, KARORI, WELLINGTON
ZL2APD HOLMWOOD, E A, 11 NEWTON PLACE, PALMERSTON NORTH
ZL2APE PARNELL, J C, 87 DUNCAN TCE, WELLINGTON
ZL2APF LUSTY, F W, 40 IHAIA ST, WAITARA
ZL2APH HAISMAN, R A, 27 VALLEY RD, GISBORNE
ZL2APJ JURY, A P, 83A FULFORD ST, NEW PLYMOUTH
ZL2APO LEIGH, P, 4 PARCELL COURT, CROMWELL
ZL2APT ROPATA, P T, 46 BRIDGE ST, BULLS 5452
ZL2APU MARSHALL, D W, PO BOX 100, PATEA
ZL2APV JURY, G V, 288 HENWOOD ROAD, NEW PLYMOUTH
ZL2APX O'DWYER, M, 135 GUPPY RD, TARADALE, NAPIER
ZL2APY HARTWIG, G, 23 GREY ST, WOODVILLE
ZL2APZ BENSON, K J, 19 COOK STREET, MELFELL, NEW PLYMOUTH
ZL2AQD WATSON, J E, 28 HARRY SHAW WAY, RAUMATI BEACH 6450
ZL2AQH VOSS, S J, RD 6, KOPANE, PALMERSTON NORTH
ZL2AQI CHEYNE, J A, 12 ABERDEEN AVE, PALMERSTON NORTH
ZL2AQK MILLARD, A J, 34 VOLGA ST, WELLINGTON
ZL2AQL SPEARMAN, M B, C/O 34 FIRST AVE, TAURANGA
ZL2AQN HEALD, P J, 26 VOELAS ROAD, LYTTELTON
ZL2AQO WILSON, K A, 149-B BIRKDALE ROAD, BIRKDALE, AUCKLAND 1310
ZL2AQR CRAWLEY, R J C, MAYFIELD- LISMORE RD, RD 5, ASHBURTON
ZL2AQS DUCKWORTH, P D, 7 EINSTEIN ST, GISBORNE
ZL2AQT BENTON, S W, KAHHUTARA RD, RD 1 WAINAWHENUA, FEATHERSTON
ZL2AQX MACARTNEY, R A, 129 SEAVIEW RD, NEW PLYMOUTH
ZL2AQY OLSON, E L, 42 EASTON PARK PARADE, GLENFIELD, AUCKLAND 1310
ZL2AR TURFREY, G A, 15B RESERVOIR RD, WAIPUKURAU
ZL2ARC CHRISTIE, ALISTAIR, 3 RHYL PLACE, BRYNDWR, CHRISTCHURCH
ZL2ARD SCHOFIELD, D T, 34 KIWI RD, RAUMATI
ZL2ARF LANE, J R, 3 BASSETT PLACE, TARADALE, NAPIER
ZL2ARG NZART NELSON BRANCH INC, PO BOX 414, NELSON
ZL2ARI WILLS, A J, 45 RUAHINE STREET, PARAPARAUMU
ZL2ARJ WEBB, B D, 71 HILLSIDE DRIVE, UPPER HUTT
ZL2ARN STEWART, D G, 75 NIMMO AVE EAST, WAIKANAE 6010
ZL2ARQ PAHL, D G, P.O.BOX 25104, CHRISTCHURCH
ZL2ART MCQUINLAN, T, 6 WHANAKE ST, TITAHI BAY 6006
ZL2ARV JAMES, ALAN, 413 FREDRICK ST, HASTINGS
ZL2ARW WILLIAMS, P R, 15 PINNY AVENUE, LOWER HUTT 6009
ZL2ARY JENKS, M D, PO BOX 193, KIRWEE 8170, CANTERBURY
ZL2AS HASTINGS BRANCH NZART (INC), P O BOX 1119, HASTINGS
ZL2ASA DINSDALE, B, 14 BENMORE AVE, PALMERSTON NORTH
ZL2ASC DENTON, S B, 384A HARDY STREET, NELSON
ZL2ASD DARBY, A R, 47 MCLAREN ST, MAYMORN, UPPER HUTT
ZL2ASF FOGERTY, S F, 5 MCCARTHY CRESCENT, MOTUEKA
ZL2ASH CLARK, B S, 5 MAMAKU GROVE, KHANDALLAH, WELLINGTON 6004
ZL2ASJ JARDINE, S J A,
ZL2ASO SEWELL, J R, 57 HINE RD, WAINUIOMATA
ZL2ASQ DAWSON, E K, 680 EAST COAST RD, BROWNS BAY
ZL2ASR GILL, A H, 41 GAVIN BLACK ST, MEEANEE, NAPIER
ZL2AST GROOMBRIDGE, J E, PO BOX 30-099, 15 OAKLEIGH ST, LOWER HUTT
ZL2ASW AVERY, G S, 24 TUDOR GROVE, FEILDING
ZL2ASY CURRIE, R G, 75 HAIR ST, WAINUIOMATA
ZL2ASZ WARDLAW, D A, NZART, PO BOX 40-525, ASTRAL TOWERS, UPPER HUTT
ZL2AT FABIAN, R R, 13 MCCOMBS STREET, SOMERFIELD, CHRISTCHURCH
ZL2ATB BLACKWELL, F N, 103 KENMORE ST, WELLINGTON
ZL2ATC HARRIS, E J, 43A CAMERON RD, NAPIER
ZL2ATE MANLEY, R C, 22 AMBERLEY AVE, PALMERSTON NORTH
ZL2ATI CARTWRIGHT, K C, 8 MCNAUGHTON ST, WAITARA
ZL2ATL LATEGAN, P A, 88 AYTON DRIVE, WHITBY, WELLINGTON
ZL2ATM APLIN, E L, 16 KAKA ST, MASTERTON
ZL2ATP HURSTHOUSE, W M, 306 PRINCES DRIVE, NELSON
ZL2ATU HORN, I G, PO BOX 7250, WANGANUI
ZL2ATV CLENCH, H J, 40 BIRDWOOD ROAD, WATERLOO, LOWER HUTT
ZL2ATX HASKELL, E H E, 1 GLENROWAN RISE, BETHLEHEM, TAURANGA
ZL2AU WILSON, W C, 21 LONDON RD, PETONE
ZL2AUA BURCH, M A G, 49 KAHU ROAD, PAREMATA 6006
ZL2AUB MOORE, P J, 54 HERBERT AVE, PALMERSTON NORTH
ZL2AUD MARTIN, W, PO BOX 104, RAWENE, HOKIANGA 0452
ZL2AUE KING, M, 312 GORDON STREET, MASTERTON
ZL2AUF BLAIR, S G, 15 POPLAR GROVE, THORNDON, WELLINGTON
ZL2AUH O'SHEA, Patrick, 4 Teppett Place, Foxton Beach, Foxton
ZL2AUJ CATCHPOLE, D, 25 TAIPAKUPAKU RD, WELLINGTON
ZL2AUK LECKIE, D A, 188 HOKIO SAND ROAD, RD 1, LEVIN
ZL2AUR TONG, T Y, 390A FERGUSSON DRIVE, TRENTHAM, UPPER HUTT
ZL2AUT MORTON, L W, 4 TORO ST, DURIE HILL, WANGANUI
ZL2AUW NASH, A L J, 20 SEDDON ST, LEVIN 5500
ZL2AUX LEWER, D H, 113 PUKEPAPA RD, MARTON
ZL2AUZ BLAIR, R L, 12 CLELAND ST, PALMERSTON NORTH
ZL2AVB HARGREAVES, A P, 22C HIGH ST, ELTHAM
ZL2AVF GIBBS, L V, 19 CAMELLIA TCE, LOWER HUTT
ZL2AVG REYNOLDS, M G, 131 MT HERBERT RD, WAIPUKARAU
ZL2AVJ MCNABB, M D, 135B BEACH ROAD, KAIKOURA
ZL2AVL LUSCOMBE, G W, MAIN RD, WAIOURU
ZL2AVM MORRIS, R H C, 21 RANGOON ST, WELLINGTON
ZL2AVR DINNIE, J S, 27 RODNEY AVENUE, TE HORO BEACH, RD 1, OTAKI
ZL2AVS HEATH, B O, 32 NIKAU ST, EASTBOURNE
ZL2AVX RHODES, C J, 54 CLIFFORD ROAD, JOHNSONVILLE, WELLINGTON
ZL2AVY OWEN, M L, KANE ST, PIRONGIA
ZL2AW BONNINGTON, R L, 182A CABLE BAY ROAD, RD 1, NELSON
ZL2AWA FARQUHAR, W E, 17 STANSELL AVENUE, NELSON
ZL2AWE COOKE, P, 31 KENT GRES, PALMERSTON NORTH
ZL2AWF ALEXANDER, D G, 34 TENNYSON ST, PETONE
ZL2AWG ROBERTS, J C, 40 GRAHAMS RD, CHRISTCHURCH
ZL2AWH BROSNAN, D C, 4/409 CHARLES ST, HASTINGS 4201
ZL2AWI SHERLEY, H F, 37 KIWI RD, RAUMATI BEACH 6450

ZL2AWJ WOODHOUSE, C W, 12 WILLOUGHBY STREET, LOWER HUTT 6009
ZL2AWR ROBERTS, A W, 184 IKITARA RD, WANGANUI EAST
ZL2AWS SAYERS, P A, 97 HAPPY VALLEY RD, WELLINGTON
ZL2AWU TILLER, B A, 14 Martin Road, Paraparaumu Beach
ZL2AWW WESSELS, A W, PO BOX 5177, LAMBTON QUAY, WELLINGTON 6015
ZL2AWY WILLIAMS, D M, 5 BOONS VALLEY ROAD, WAIKAWA, PICTON
ZL2AX WARD, J G, 288 SMITH ROAD, RD 8, DANNEVIRKE
ZL2AXA DEWAR, A M, 248A OHIRO RD, WELLINGTON
ZL2AXB CRAWLEY, D R K, CAMPBELL RD RD 1, WANGANUI
ZL2AXC RAGAN, G S, 32 MITCHELL ST, WANGANUI
ZL2AXG YOUNG, W D D, 20 REXWOOD ST, CARTERTON
ZL2AXH AITCHISON, W B, 11 LIPMAN STREET, MT VICTORIA, WELLINGTON
ZL2AXL HARVEY, P R, 4A NORTON RD, OTUMOETAI, TAURANGA
ZL2AXN CRANE, R G, 11 DICKENS LANE, R D 1, WANGANUI 502
ZL2AXO MATHERS, R W, POHARA VALLEY ROAD, TAKAKA
ZL2AXP LATTA, I K, 31 COLLINGWOOD ST, PALMERSTON NORTH

ZL2AXQ ROWLANDS, R E, 16 NORNA CRES, WELLINGTON
ZL2AXR RAMSAY, K A, 130A CHEVIOT RD, LOWRY BAY, WELLINGTON
ZL2AXT BREMFORD, J D, 9 WINSTON ST, WELLINGTON
ZL2AXW ANDREW, P J,
ZL2AXY DEVENPORT, J A, 17 SUNNY GROVE, WAINUIOMATA 6008

ZL2AYB FISHER, W G, 40 BEAUCHAMP ST, WELLINGTON
ZL2AYE WASTNEY, R J, 126 THE RIDGEWAY, NELSON
ZL2AYF AMIES, B W, 15 LYNDHURST RD, TAWA
ZL2AYK KELLY, R W, 173 VICTORIA ST, CAMBRIDGE
ZL2AYM SCHOLEFIELD, C O, 8 MARTIN AVENUE, WAKEFIELD, NELSON
ZL2AYQ HILL, K J, 27 WELLAND PLACE, OWHIRO BAY, WELLINGTON 6002
ZL2AYS BURTON, F S, 48 WIKITORIA RD, WANGANUI 4501
ZL2AYT BOLTON, P E, 176B KATHERINE MANSFIELD DRIVE, WHITEMANS VALLEY, UPPER HUTT 6007
ZL2AYU LEASK, D W, 11 CANNON ST, NEW PLYMOUTH
ZL2AYX POHL, K P,
ZL2AYY WAGHORN, T J, 12 HAWKINS DRIVE, MARTINBOROUGH 5954
ZL2AYZ COUSINS, W G, 20 BUICK STREET, BLENHEIM
ZL2AZ LAKE, P B, 12 BRASENOSE PLACE, TAWA 6006
ZL2AZA BORRELL, D, 109 POPE ST, CAMBORNE, WELLINGTON
ZL2AZE STRETCH, F, 3C HEATHER PLACE, PICTON 7372
ZL2AZH NOEL, L E H, PO BOX 133, RONGOTEA
ZL2AZJ COLE, A G, 66 PONSONBY RD, WELLINGTON
ZL2AZK LANKSHEAR, B R, 13 KIM CRESCENT, BLENHEIM
ZL2AZN WALKER, D G, 16 STEPHEN ST, JOHNSONVILLE, WELLINGTON 6004
ZL2AZP PINNY, H G, 6 DERWENT CLOSE, PARAPARAUMU
ZL2AZR HARRIS, M G, PO BOX 2043, RAUMATI BEACH
ZL2AZV STEPHEN, J M, 11 REEVE DRIVE, HAVELOCK NORTH
ZL2AZY OWEN, S C, 550 KANE ST, PIRONGIA 2450
ZL2AZZ RANDALL, J H, 7A SUNNY GLEN, WAIKANAE
ZL2BAB BERESFORD, B A, 41 WORKSHOP RD, MASTERTON
ZL2BAC OSBORNE, T G, 46 HICKS CRESCENT, WAIKANAE BEACH 6010
ZL2BAE SEARING, J J,
ZL2BAF DONOGHUE, C J, 35 MANCHESTER ST, PALMERSTON NORTH
ZL2BAG MARTIN, P J, 2/21 WANGANUI AVENUE, HERNE BAY, AUCKLAND
ZL2BAI GARTH, D J, 1001 WHAREKOPAE RD, R D 2, GISBORNE
ZL2BAK DOUGLAS, R J, 507 RIVERSIDE DRIVE, NAENAE, LOWER HUTT
ZL2BAP PACKER, B A, 10 PATNA STREET, NGAIO, WELLINGTON
ZL2BAQ CARR, P H, 17 TIMARU GROVE, LOWER HUTT 6009
ZL2BAT RAMAGE, B H, 28 WILMINGTON PLACE, FAIRWAY PARK, CHRISTCHURCH 8006
ZL2BAU MALLETT, P J, 22 MEEHAN STREET, BLENHEIM
ZL2BAW MCCARRON, J R, METLIFECARE COASTAL VILLAS, 134 POHUTUKAWA PLACE, PARAPARAUMU
ZL2BAY ELVY, J M, 62A SALISBURY ROAD, BIRKDALE, NORTH SHORE
ZL2BB BRADSHAW, F R, 40 SIMLA AVE, HAVELOCK NORTH
ZL2BBA RUNDLE, W J, C/O MRS LOIS FERGUSON, 151 MURPHY ROAD, PAUATAHANUI, PORIRUA
ZL2BBC COCKS, P, 24 PIRINOA ST, FEILDING
ZL2BBG GOSNELL, J B, 10 ETON PLACE, PALMERSTON NORTH
ZL2BBH JANSEN, J H, WAIROAITI, SEAFIELD RD, R D 2, NAPIER
ZL2BBL BARWICK, L G A, 25 WADES AVE, CHRISTCHURCH
ZL2BBN FINCH, B P, 142 BROOKLANDS RD, NEW PLYMOUTH
ZL2BBO LEALAND, T P, 16 HUNTER ST, HAWERA
ZL2BBS DOIG, A M, 72 GORDON RD, PLIMMERTON
ZL2BBT GROVE, K E, 3 LOMOND ST, NEWLANDS, WELLINGTON
ZL2BBU PEARMAIN, C E, 47 ALTON STREET, NELSON
ZL2BBZ DICKSON, L P, 57 VICTORIA ROAD, NEW PLYMOUTH
ZL2BC GENTRY, K R, 8 CHUDLEIGH GROVE, WELLINGTON
ZL2BCA SCOTT, D L, 74 DODSON VALLEY ROAD, ATAWHAI, NELSON
ZL2BCB TUNNICLIFFE, C G, 15 CARMEN TCE, SNELLS BEACH, AUCKLAND
ZL2BCE RACE, D J R, 20 EXETER CRES, PIRIMAI, NAPIER
ZL2BCF PRATT, D H, 30 DEEPDALE ST, BURNSIDE, CHRISTCHURCH
ZL2BCG JACKSON, J, 246 THORP STREET, MOTUEKA
ZL2BCK THORP, G R, 28 HETLEY CRES, TARADALE, NAPIER
ZL2BCL DAGG, A H, 77 BARKER RD, NAPIER
ZL2BCO OFFICER, B C, 30 PETERHOUSE ST, TAWA, WELLINGTON

ZL2BCP BROMLEY, J H, 9 ARCHER PLACE, CARTERS BEACH, WESTPORT
ZL2BCV WILLIAMS, C W, 36 TAWA ST, HAWERA
ZL2BCW KERR, M J B, 40 RODRIGO RD, KILBIRNIE, WELLINGTON 6003
ZL2BCY WALLEN, E J, 35 RANGINUI ST, NGONGOTAHA
ZL2BCZ BAILEY, I K, C/ PO BOX 75, NGONGOTAHA, ROTURUA
ZL2BD ROBBINS, B J, 10 ECLIPSE LANE, WHITBY, PORIRUA 6006
ZL2BDB HERBERT, J W, PO BOX 97, PICTON
ZL2BDD HARRIS, R S, MT ADDE, R D 4, BLENHEIM
ZL2BDG HEAD, B P, 4 CHANNING CLOSE, BETHLEHEM, TAURANGA 3001
ZL2BDH HULSE, J C,
ZL2BDK RODDA, D G, 4D TOTARA ST, MASTERTON
ZL2BDL MCLACHLAN, R M, PO BOX 8157, HAVELOCK NORTH
ZL2BDM MOTE, B J, 55 BURNESS RD, GREENMEADOWS, NAPIER

ZL2BDQ JOHNSON, W J, 363 WESTMINSTER AVE, NAPIER
ZL2BDR GREIG, N A, 145 NORMANDALE RD, LOWER HUTT
ZL2BDS CORBETT, A A, 7 MORRINGTON TERRACE, BLENHEIM
ZL2BDU PICKETT, B T, 869 MAIN ST, PALMERSTON NORTH
ZL2BDW SMITH, G B, 1299 FERGUSSON DRIVE, UPPER HUTT
ZL2BE WOOLLARD, C J, PO BOX 2272, STORTFORD LODGE, HASTINGS
ZL2BED DUNKLEY, G J H, L ECOLE, FRENCH FARM, RD 2 AKAROA
ZL2BEF LONDON, P R, 92 MAJORIBANKS STREET, MOUNT VICTORIA, WELLINGTON
ZL2BEG CROPP, B A, 7 BLUE MOUNTAINS RD, SILVERSTREAM, UPPER HUTT
ZL2BEJ SQUIRE, D N, 266 OLD COACH RD, RD 9, TE PUKE
ZL2BEK CAMPBELL, L T, 14 LEIGHTON AVE, LOWER HUTT
ZL2BEL HOOGEVEEN, W, 1 METRO AVE, HAMILTON
ZL2BEP WHITEFORD, P C, 46 CENTRAL TCE, KELBURN, WELLINGTON
ZL2BEQ PENBERTHY, P M, RD 5, RANGITIKEI LINE, NEWBURY, PALMERSTON NORTH
ZL2BER CROMPTON, R P K, 97 INLET RD, KERIKERI
ZL2BEZ MILLER, P G, 2 DOWNING STREET, CHARTWELL, WELLINGTON 6004
ZL2BF FEICKERT, B, REDWOOD PASS, AWATERE VALLEY, RD 4, BLENHEIM
ZL2BFB WILDE, R H, 179 COOK ST, PALMERSTON NORTH
ZL2BFE FAKE, J L, 44 CUMBERLAND ST, NEW PLYMOUTH
ZL2BFF CUMMERFIELD, G C, 3 CROXLEY PLACE, PALMERSTON NORTH
ZL2BFG WEBLEY, H R, 21 FENDALTON DRIVE, CAVERSHAM, HAMILTON 2001
ZL2BFH HOLT, D, 5 HILLARY HEIGHTS, GISBORNE
ZL2BFJ IRELAND, P J, 45 GEORGE ST, LEVIN, 5510
ZL2BFR WIGGINS, H N, 23 SLACKS RD, PALMERSTON NORTH
ZL2BFS RUSHTON, G A W, 30B MOULTON STREET, NEW PLYMOUTH
ZL2BFU LACEY, G, 27 BLEDISLOE ST, MASTERTON
ZL2BFX KERR, A J, 1/28B Rangers Road, Cremorne, NSW
ZL2BFY LAMBERT, R, 7 KONINI ST, MASTERTON
ZL2BFZ THUM, F A, 43 RIMU STREET, WAIKANAE 6454
ZL2BG WILLIAMS, P G, MANGAKURI, R D 14, HAVELOCK NORTH 4230
ZL2BGC PASSUELLO, M G D, 36 ANDREW STREET, WAIKANAE 6010
ZL2BGD YORK, R W F, 41A NELSON STREET, BLENHEIM
ZL2BGE BOYLE, L, 37 LEWIS AVE, WANGANUI
ZL2BGI PYCROFT, W J, 156 MILTON STREET, NELSON
ZL2BGJ JONAS, G M, 21 MALONE ROAD, LOWER HUTT 6009
ZL2BGL CONWAY, I W, CASEYS ROAD, RD, SEDDON 7353
ZL2BGR ROBERTS, B G, 4 GLENAMOY CRES, JOHNSONVILLE, WELLINGTON
ZL2BGX SMITH, W H, 22/305 EVANS BAY PARADE, WELLINGTON 6003
ZL2BGZ MCLEAN, G M, 107 RICHMOND ST, PETONE
ZL2BH ELVY, S J, LARKSFIELD, 34 ST LEONARDS ROAD, R D 1 BLENHEIM 7321
ZL2BHD BATEMAN, G W, 54 MURRAY AVE, HAWERA
ZL2BHE WALKER, D C, PO BOX 5304, LAMBTON QUAY, WELLINGTON 6040
ZL2BHF MEACHEN, J A, UNIT 1/ 25 CORONATION RD, GLENFIELD, AUCKLAND
ZL2BHG LAWSON, J R, 114 HOSPITAL ROAD, BLENHEIM

ZL2BHH BURNHAM, E D, 15 TAWA ST, LEVIN
ZL2BHI ORAMS, K J, 13 EAGLE ST, WELLINGTON
ZL2BHJ ANDREWS, G J, 66 KHANDALLAH RD, KHANDALLAH, WELLINGTON 6004
ZL2BHK JOHNSON, D H, 23 CULZEAN GROVE, BELL BLOCK, NEW PLYMOUTH
ZL2BHL FOWLER, R L, 513 MAIN ROAD, RIWAKA, R D 3 MOTUEKA
ZL2BHM MATTHEWS, E F, RD, MOEAWATEA, WAVERLEY
ZL2BHN ALLARDYCE, J P G, MARIST SEMINARY, 10 HOPETOUN STREET, NEWTON, AUCKLAND 1001
ZL2BHO HENDERSON, R L, 426 GLOUCESTER ST, TARADALE, NAPIER
ZL2BHR INWOOD, R G, 22 BENMORE AVE, PALMERSTON NORTH
ZL2BHT MCLAREN, D M, BDM TRUST, C/- 1 DI LEVA WAY, NELSON 7001
ZL2BHV KILGOUR, A D, 7 MEADOW ST, KAIAPOI
ZL2BHW QUAYLE, R P, C/O 5 TE PARI PARI RD, PUKERUA BAY
ZL2BHX VERNON, T J E, 1 WHIO ST, TAIHAPE
ZL2BI HOGAN, T J, PO BOX 39-166, WELLINGTON MAIL CENTRE, WELLINGTON
ZL2BIB MEIKLE, D A, 73A WAIKAWA ROAD, PICTON
ZL2BIF MCKAIN, S J, 31 HIKUTAIA RD, OPOTIKI
ZL2BIG BINGHAM, W J, 31 ELIZABETH ST, FEILDING
ZL2BIL COX, W R, 5A KONINI GROVE, RAUMATI BEACH 5032
ZL2BIN FLETCHER, G L, PO BOX 66, TAKAKA
ZL2BIO BARNES, D J, PO BOX 3265, RICHMOND
ZL2BIQ THORNER, G, 10A BELLA ROSSA DRIVE, HORNBY, CHRISTCHURCH
ZL2BIR KIDD, P R, 8 GOLDIE PLACE, WAIKANAE
ZL2BIS PORTER, I G, 20 BELFIELD ST, CHRISTCHURCH
ZL2BIT WILLAN, L R, 8 WARREN PLACE, NEW PLYMOUTH
ZL2BIU MCCAW, J I, 233 CHARTWELL AVE, WHANGAMATA
ZL2BJ HAWKEN, B J, 655 MAIN ROAD, STOKE, NELSON
ZL2BJA ANGLAND, B J, 43 KENTUCKY WAY, PALMERSTON NORTH
ZL2BJB HORNE, D A, 10 KENWYN DRIVE, CARTERTON, 5951
ZL2BJD ROBSON, E H, 64 ALEXANDER AVE, NAPIER
ZL2BJG MCGREGOR, B A, 4 HINDMARSH DRIVE, TAUPO
ZL2BJJ JARDINE, B J,
ZL2BJO CATHCART, S J, P O BOX 1537, PALMERSTON NORTH
ZL2BJS JAMIESON, D R, 2 WAIPUNA STREET, BLENHEIM
ZL2BJU THOMPSON, J J, 17 SOMERSET CRESCENT, PARAPARAUMU
ZL2BJV MENZIES, K J, MAIN ROAD, GROVETOWN, BLENHEIM
ZL2BJY BENSON, A P, 14 MARK PERREAU PLACE, FOXTON
ZL2BK SIMPSON, G R, 8A FAULKLAND DRIVE, BLENHEIM
ZL2BKA DALE, J S A, 689 EAST COAST RD, BROWNS BAY, AUCKLAND 1310
ZL2BKI HURST, J J, 11 FERGUSON VILLAGE, WARD STREET, UPPER HUTT
ZL2BKL ALLEN, B W, INLAND NORTH RD, R D 43, WAITARA
ZL2BKN BURLING, B N G, 69 MEEANEE QUAY, NAPIER
ZL2BKW HARROWFIELD, T R, RD 8, ROBERTS LINE, PALMERSTON NORTH
ZL2BKY COX, K L, 37 CUBA ST, PETONE
ZL2BKZ RODRIGUES, J F C, FLAT 4, 25 CLAWTON ST, NEW PLYMOUTH
ZL2BL BESWICK, D J, 283 HAPPY VALLEY RD, WELLINGTON
ZL2BLB AMES, M L, RD 1, QUEEN ST EAST, LEVIN
ZL2BLC OTTAWAY, J T J, 5 HAMERTON STREET, LOWER HUTT 6009
ZL2BLE DEW, A W, 5 POKOHIWI ROAD, HOMEBUSH, MASTERTON 5901
ZL2BLF KOOY, W, 167 LANGDALE AVENUE, PARAPARAUMU 6010
ZL2BLH ELLISON, D M, 281A FLAXMERE AVENUE, FLAXMERE, HASTINGS
ZL2BLI INKSTER, D J, PO BOX 21, OHAKUNE
ZL2BLJ HODGKINSON, J, 16 HARPER ST, WANGANUI
ZL2BLK LEARMONTH, B H, 924 MAIN ROAD KOPANE, R D 6, PALMERSTON NORTH 5321
ZL2BLM RAIT, N A H, 2 REVANS ST, FEATHERSTON
ZL2BLN SCARROTT, P E, BUCHANAN RD, BAY VIEW, NAPIER
ZL2BLO MOORE, P C, 8 MAXWELL PLACE, NAPIER
ZL2BLP RODGERS, G K, 43 DUNAIR DRIVE, BURWOOD, CHRISTCHURCH 6
ZL2BLQ MANGIN, S G, 33 WEST ST, GREYTOWN
ZL2BLS LAVERY, M W, 16 MORRISSEY ST, HAWERA
ZL2BLX MCLAUCHLAN, A C L, 81A OXFORD ST, TAWA
ZL2BM JOHNSON, A F W, F 1 / 92 ARTHUR STREET, BLENHEIM
ZL2BMA CALVERT, R H G, KURATAWHITI ST, GREYTOWN
ZL2BMB WALKER, M K R, 13A Hildreth Street, KARORI, WELLINGTON 6005
ZL2BMC CHILDS, J R, 1002 FREDERICK ST, MAHORA, HASTINGS
ZL2BME CLARKE, G R, 57 KAURI STREET, MIRAMAR, WELLINGTON 6003
ZL2BMH IRVING, J E, 38 LAWRY ST, NEW PLYMOUTH
ZL2BMI SEARS, E J, 9 SADLIERS STREET, STOKE, NELSON
ZL2BMJ RAILTON-JACKS, P N, 31 SEAFORTH AVE, PALMERSTON NORTH
ZL2BMK BOWMAN, R F, 146 CONCLUSION ST, PORIRUA
ZL2BMO GARROD, J, 82 PATUWAI ROAD, RD 1, WHAKATANE
ZL2BMS MOORE, M B, 187 RIVERSIDE DRIVE, LOWER HUTT
ZL2BMZ MURRAY, P L, RD, PAPARATA RD, BOMBAY
ZL2BN RICE, L J, 67 WITHER ROAD, BLENHEIM
ZL2BNA HITCHMAN, G J, 33 NORFOLK CRES, FEILDING
ZL2BNB WALKER, R A, 28 FORFAR STREET, CAVERSHAM, DUNEDIN
ZL2BNC COOK, R A, 9 FURLONG CRESCENT, CHURTON PARK, WELLINGTON
ZL2BND SMITH, T W, 4 ST JOHNS TCE, TAWA
ZL2BNE MARR, N C, 322 OLD RENWICK ROAD, R D 2, BLENHEIM
ZL2BNG GIBELLINI, J A, 71 POINT ROAD, MONACO, NELSON
ZL2BNH BASTIN, F T, 103 GASCOIGNE ST, HASTINGS
ZL2BNM MCKAY, P G, 2/130 QUEENSCLIFF ROAD, QUEENSCLIFF, SYDNEY N.S.W. 2096
ZL2BNN ROBINSON, H T, 6 BECROFT DRIVE, FORREST HILL
ZL2BNP JOHNSON, P G, P O BOX 162, CROMWELL
ZL2BNQ CLAYDON, K W, 86 REWA ST, INGLEWOOD
ZL2BNS TOWNSHEND, A P, 12 ATHOL STREET, THE GLEN, RD 1, NELSON
ZL2BNV LOWE, P A, 7 RICHOMD AVENUE, KARORI, WELLINGTON
ZL2BNX ISHERWOOD, K, 49 AVONDALE RD, TARADALE, NAPIER
ZL2BO SIMPSON, W N, 20 WHAREPAPA GROVE, MOTUEKA
ZL2BOA THORP, M D, 28 HETLEY CRES, TARADALE, NAPIER
ZL2BOB PRIEST, B W, 21 WINCHESTER ST, PALMERSTON NORTH
ZL2BOE LARGE, R A, 44 DONNELLEY DRIVE, WAINUIOMATA
ZL2BOF NIXON, S M, 4 SPYGLASS LANE, WHITBY
ZL2BOI MORETTI, G S, 9 DROYLSDEN PLACE, PALMERSTON NORTH
ZL2BOJ HARRIS, R E, 7 HEMPTON ST, NEW PLYMOUTH
ZL2BOL BIGGINS, B F, 70 LOHIA ST, WELLINGTON
ZL2BOM PHILLIPS, O K, 12 TOTARA ROAD, PALMERSTON NORTH
ZL2BON NICHOLLS, S P, P O BOX 5, PONGAROA
ZL2BOO HOPE, M R, PO BOX 812, BLENHEIM
ZL2BOP BRADLEY, R L, 59 OTIA DRIVE, RICHMOND 7002, NELSON
ZL2BOU CARTER, A F, 30A NEWMAN AVENUE, BRIGHTWATER
ZL2BOV GRIFFITHS, B A, 2/6 PRINCESS STREET, WAITARA
ZL2BOW HOWAN, A R, 7 ALMORA VIEW, ASCOT PARK, PORIRUA
ZL2BOY CLARKE, R G, 3 WHITBY PLACE, NEW PLYMOUTH
ZL2BP MCNABB, R A,
ZL2BPB SANDILANDS, L C, 518 LOCKINGTON ROAD, R D 2, KATIKATI
ZL2BPC KUIPERS, E V, C/O 153 NAYLAND ROAD, STOKE, NELSON
ZL2BPD DONOVAN, P E, 389 MURITAI RD, EASTBOURNE
ZL2BPE VENNIX, J H, 15 HAWKINS DRIVE, MARTINBOROUGH
ZL2BPG HARDING, B P, 119A WERAROA ROAD, LEVIN
ZL2BPI WATT, I D, c/o 9 Field Street, Wanganui
ZL2BPJ MADDOCK, R H, 2 WAIPUNA GROVE, STOKES VALLEY, LOWER HUTT
ZL2BPL KERSLAKE, M G R,
ZL2BPS STEWART, P J, 1024 WHITEMANS VALLEY RD, UPPER HUTT
ZL2BPT CRAW, G J, RD 3, COUPERS RD, PALMERSTON NORTH
ZL2BPU GOODALL, R N, 31 PLYMOUTH RD, FLAXMERE, HASTINGS
ZL2BPX THOMPSON, S A, 8 DAMPIER AVE, PALMERSTON NORTH
ZL2BPZ MCIVOR, W G, 218 WEST STREET, GREYTOWN
ZL2BQA NIELD, G S, TE WHARAU RD, R D 3, MASTERTON 5921
ZL2BQL VAN LOEMEN, E, RD 4, CHRISTCHURCH
ZL2BR HUNT, A F, 8 MANU CRES, NEW PLYMOUTH
ZL2BRA CASH, I M, 77 GREY ST, WAITARA
ZL2BRF Fearnley, Brian, 7 Claverton Grove, Churton Park, Wellington
ZL2BRG EATOUGH, S, 53 POTO RD, NORMANDALE, LOWER HUTT
ZL2BRI WILKINS, A G J, 3 RAILWAY TERRACE, OHAU, RD 20, LEVIN
ZL2BRM HENRARD, E A M, 6 BAILLIE CRES, CARTERTON 5951
ZL2BRQ GRAHAME, K S, 19 CHADWICK PLACE, PALMERSTON NORTH
ZL2BRS RUSSELL, S G, 85 RUGBY ST, PALMERSTON NORTH
ZL2BRU ALLISON, R, 8 EDINBURGH ST, DANNEVIRKE
ZL2BS WARD, T W, PO BOX 4127, NEW PLYMOUTH
ZL2BSJ KNOL, W, 3/154 ONEPU RD, LYALL BAY, WELLINGTON
ZL2BSL MATHESON, J D, 61 TITOKI STREET, MASTERTON
ZL2BSP LLOYD, W M, PO BOX 20554, TE RAPA, HAMILTON
ZL2BSQ LAWRENCE, R W C, 25 LINWOOD DRIVE, PARAPARAUMU 6010
ZL2BSR ROBERTS, B, P O BOX 3168, NAPIER
ZL2BSW GEDYE, E D M, 15 SEINE ST, WELLINGTON
ZL2BT FENNESSY, B G K, 1/204 SOUTHAMPTON WEST, HASTINGS 4201
ZL2BTF BUDGE, D, HERONCROFT, MOTUEKA QUAY, MOTUEKA
ZL2BTG WOODHAM, R B, 9 KING STREET, ASHBURTON

ZL2BTH

ZL2BTH EMSLIE, H H, P O BOX 19, TUAMARINA
ZL2BTJ YORK, K E, 20B SPRINGSWOOD GROVE, BLENHEIM
ZL2BTK WILLINGS, H K, 27 OXFORD STREET, PICTON
ZL2BTL STEENHART, L, 27 KINGSFORD DRIVE, STOKE, NELSON
ZL2BTO DUNCAN, C W, P O BOX 5145, PORT NELSON, NELSON
ZL2BTQ ELWOOD, R F, 44 HIGH STREET, RENWICK 7352
ZL2BTU DAKEN, T R, 259D ANIKIWA ROAD, RD 1, PICTON
ZL2BTV CHING, G R, 51 MCLAUCHLAN STREET, BLENHEIM
ZL2BU JAMES, B T, FLAT 1, 413 MAIN ROAD, STOKE, NELSON
ZL2BUI BROSNAN, J, 2/19 Howard Road, Eastbourne, WAINUIOMATA
ZL2BUK STRATTON, G J, 17 YORK STREET, MOTUEKA
ZL2BV VERNALL, R B, 90 CAMPBELL ST, KARORI, WELLINGTON 6005
ZL2BW HARLING, D S, 142 QUEBEC ROAD, NELSON
ZL2BWK KELL, B W, 86 NAVIGATION DRIVE, WHTIBY, PORIRUA
ZL2BWL LUKE, B W, 1/104 LOVEDALE ROAD, HASTINGS
ZL2BX CRESSWELL, A F, 36 TITIROMOANA RD, KOROKORO, PETONE
ZL2BY FLUERTY, R M, 24 THE SOUNDING, WHITBY, PORIRUA
ZL2BYD PERRETT, I G, 22 MEADE PLACE, BELL BLOCK, NEW PLYMOUTH 4061
ZL2BZH BANKS, G J, 6B VIRGINIA PLACE, NEW PLYMOUTH
ZL2BZN O'DONNELL, A A, 39 LISMORE ST, NEW PLYMOUTH
ZL2CA VERNALL, R B, 90 CAMPBELL ST, KARORI, WELLINGTON 6005
ZL2CAM CAMPBELL, M H, 65 POINT ROAD, MONACO, NELSON
ZL2CAN MORRIS, G N, 15 OAKLEY COURT, EATWELL AVE, PARAPARAUMU 6010
ZL2CAT RIDGE, J D, 48 AWANUI DRIVE, WAIKANAE
ZL2CB BROWN, C H, 558 WAINUI RD, GISBORNE
ZL2CC MATHER, M S, 85 KANAKANAIA ROAD, TE KARAKA
ZL2CCT TRATTLES, C, PO BOX 57194, MANA, PORIRUA
ZL2CD HAMER, W R, 187 SEATOUN HEIGHTS, MIRAMAR, WELLINGTON 6003
ZL2CDH MARSHALL, N R D, 58 FITZHERBERT AVE, WANGANUI
ZL2CDK MCCORMICK, C D K, 14 PUKEKO PLACE, WESTSHORE, NAPIER
ZL2CDM MILLS, C D, 59 ROBINSON CRES, PALMERSTON NORTH
ZL2CE BICKNELL, J A, PAPAWAI RD, GREYTOWN
ZL2CF LEE, C, PO BOX 90, CLIVE
ZL2CG CORNICK, M L, 23 OAKLEY AVE, MARTON
ZL2CH WHITE, A J, PO BOX 6013, GLENVIEW, HAMILTON
ZL2CHJ GOLDING, W J, PO BOX 8173, HAVELOCK NORTH
ZL2CI SINTON, A J, 6 CHESTER ST, GREENMEADOWS, NAPIER
ZL2CIA GRAHAM, W,
ZL2CID MORRISON, N J, P O BOX 5012, PORT NELSON, NELSON
ZL2CIT ROULSTON, P R, 7 ARUNDEL GROVE, SILVERSTREAM 6007
ZL2CJ AUSTIN, P H, F2/48 MASEFIELD STREET, STOKE, NELSON
ZL2CJH KING, M R, 5 POPLAR ST, GISBORNE
ZL2CJR ROBERTSON, C J, 23 RICHMOND AVE, KARORI, WELLINGTON
ZL2CJZ Zawodny, Chris,
ZL2CK CREEDY, J,
ZL2CL GUEST, R, 24A MIZPAH RD, BROWNS BAY, AUCKLAND 1310
ZL2CLB WILLIAMS, BENJAMIN CALEB, 29A TAYLOR PASS ROAD, BLENHEIM
ZL2CLI MCARTHUR, E J B, C/O DR I MCARTHUR, PO BOX 126, CARTERTON
ZL2CLL O'SULLIVAN, T S, 27 STOKES VALLEY RD, STOKES VALLEY, LOWER HUTT
ZL2CM MARAIS, C P, 2 DORCHESTER PLACE, THORNTON ESTATE, HAMILTON
ZL2CMC MCEWEN, C R, 21 SUNNYSIDE RD, NAWTON, HAMILTON
ZL2CMG MILNE, T G, C/- 12 RAHUI STREET, STRATHMORE, WELLINGTON
ZL2CNE EMKE, C N, 12 LEMON ST, OTAKI
ZL2CO O'SULLIVAN, J P, 1 COOPER PLACE, RICHMOND
ZL2COS BROWN, D W, 34A IZARD ROAD, KHANDALLAH, WELLINGTON 6004
ZL2CP POPPE, C J, PO BOX 7, TAUPO
ZL2CPH HARVEY, P N, 11 MONTEGO PLACE, MANUREWA, AUCKLAND
ZL2CPR ROOD, P A, 13 Pamir Place, Welcome Bay, TAURANGA
ZL2CQ MANLEY, P F, 225 Bridgman Road, TE AWAMUTU, HAMILTON
ZL2CR MILLER, N, 36 STANLEY ST, WELLINGTON
ZL2CS ROBERTS, W S, 188 NIKAU ST, HASTINGS
ZL2CT EVANS, B, SOUTH FEATHERSTON RD, R D 1, FEATHERSTON
ZL2CU UNDERWOOD, C, 5 REWA ROAD, HAITAITAI, WELLINGTON
ZL2CV CREEDY, J,
ZL2CVA ADAMS, A E, 1 EAST BEACH, WAITARA
ZL2CVJ JAYNES, Vicky Cirrus, 17 BLICK TERRACE, NELSON
ZL2CVW SAUNDERS, A M, 96 ORIEL AVENUE, TAWA, WELLINGTON 6006
ZL2CW GILBERT, G B, 10 CHESTERTON ST, JOHNSONVILLE, WELLINGTON 6004
ZL2CWA ARMSTRONG, C W, 74 TUKAPA STREET, WESTOWN, NEW PLYMOUTH
ZL2CX STENNING, P D, PO BOX 4, UPPER MOUTERE, NELSON
ZL2CY PALMER, N D, 7 BARRETT COURT, STOKE, NELSON
ZL2CZ CLIBBORN, G H, 30 KENT TCE, TARADALE, NAPIER
ZL2CZM ROONEY, J M, 48 RIMU ST, WAIKANAE
ZL2DA APPLETON, D, 19 FRANKLIN TCE, HAVELOCK NORTH
ZL2DAA ANNETT, DAVID A, 111B ESKDALE ROAD, BIRKDALE, AUCKLAND
ZL2DAN LEYLAND, D J, 20 Henry Street, Ebdentown, UPPER HUTT
ZL2DAP LUXFORD, K B G, 26 KENNEDY GR, STOKES VALLEY, LOWER HUTT
ZL2DAY MOTT, P W, PO BOX 36-502, NORTHCOTE, AUCKLAND 1330
ZL2DB BROWN, A D, 110 LEINSTER AVENUE, RAUMATI 6010
ZL2DBA JORGENSEN, L H, 291 SOUTH RD, RD4, NEW PLYMOUTH
ZL2DBC CHILD, J, PO BOX 82-109, HIGHLAND PARK, AUCKLAND 1730
ZL2DBE PEART, C J, 7 CROMWELL ST, MURCHISON
ZL2DBO O'DONNELL, J N, 39 LISMORE ST, NEW PLYMOUTH
ZL2DBT MARSH, H A, 2/187 CARRINGTON ST, NEW PLYMOUTH
ZL2DBX JAGO, J N, 156 PEMBROKE ROAD, STRATFORD, TARANAKI
ZL2DC CHISHOLM, W P, 1 CAMELLIA COURT, PALMERSTON NORTH
ZL2DCB BYRON, D C, 14 WOBURN PLACE, PALMERSTON NORTH
ZL2DCS SCHOLES, D, 167 MILTON STREET, NELSON
ZL2DCW WOODING, D, 132 SCOTT STREET, BLENHEIM
ZL2DD SCOTT, D F, 68 CHATSWORTH RD, SILVERSTREAM
ZL2DE JOHNSON, D H, F 1 / 92 ARTHUR STREET, BLENHEIM
ZL2DEX MUIR, D N, 5 Edinburgh Street, LEVIN
ZL2DF HAYTON, N M, 31 CAMERON STREET, NEW PLYMOUTH
ZL2DG MCBETH, D O, 21B PORT VIEW CRESCENT, NEW PLYMOUTH
ZL2DH WELSH, J W, 35 BEACH ROAD, RICHMOND, NELSON
ZL2DI SHORTT, J H, 80 SAVAGE CRES, PALMERSTON NORTH
ZL2DIZ TRATTLES, D L, PO BOX 57 194, MANA, PARAMATA
ZL2DJ DICKSON, W J, 21 GRENVILLE ST, NEW PLYMOUTH
ZL2DJA ANDERSON, D A D, NOSREDNA DYOLL, FACTORY ROAD RD 3, RIWAKA MOTUEKA
ZL2DJB BALDWIN, D J, 8 CAMBRIDGE STREET, PATEA
ZL2DJF FOX, D J, 112 NGAMOTU RD, NEW PLYMOUTH
ZL2DK KEENAN, D S J, 13 RURU CRES, UPPER HUTT
ZL2DLS NGUYEN HUU, T, 201 TUKAPA STREET, NEW PLYMOUTH
ZL2DM CHRISTIAN, T C, 4 SNOWDEN AVE, PALMERSTON NORTH
ZL2DN LUCAS, D C, C/O SOLANDER FISHERIES LTD, P O BOX 5041, PORT NELSON
ZL2DNS THORP, D, 246 MOUNTAIN ROAD, SENTRY HILL RD 3, NEW PLYMOUTH
ZL2DO MCMILLAN, R H, 8 BROOKLANDS WAY, MARYBANK, NELSON 7001
ZL2DOG ALLAN, A R, 18 ELMWOOD AVENUE, BLENHEIM
ZL2DON CUTHBERT, D, 20A GUTHRIE STREET, LOWERHUTT
ZL2DOW DOW, A J,
ZL2DP PURTON, S D, 376 BOTANICAL RD, PALMERSTON NORTH
ZL2DR REID, D, PO BOX 85, LEVIN
ZL2DRF FARLEY, D, 119 JICKELL STREET, PALMERSTON NORTH
ZL2DS HOROWHENUA BRANCH 16 NZART, C/- 24 PAEROA ROAD, RD 12, LEVIN
ZL2DSW WILLIAMS, D S, 156 MAIN RD, WAINUIOMATA 6008
ZL2DT CORDY, J G G, 50 STRATHMORE AVE, WELLINGTON
ZL2DTM Morris, D T, 316/1 Budden Rd, RD 5, Pokuru
ZL2DU MILLANE, M L, 132 CAMPBELL ST, WELLINGTON
ZL2DUS HENDERSON, K H, 30 VAUCLUSE AVE, PARAPARAUMU 6010
ZL2DVY HUNT, D, 403 COLLEGE ST, PALMERSTON NORTH
ZL2DW WALKER, D J, BOX 2403, STORTFORD LODGE, HASTINGS
ZL2DX HANNAGAN, C C, FRATERS ROAD, R.D.1, MARTINBOROUGH 5954
ZL2DY PARSONS, A D, HUTT GABLES VILLA 9, 109A FERGUSSON DRIVE, UPPER HUTT
ZL2DZ JANASZKIEWICZ, R, 26 FOSTER STREET, AVALON, LOWER HUTT 6009
ZL2FA HOGAN, A V,
ZL2FAB BURGESS, F A, 24 ISLAND RD, GISBORNE
ZL2FAE STANNARD, S, 25 TOTARA CRESCENT, WOBURN, LOWER HUTT
ZL2FAR MULLINS, M J, 41 MENIN ROAD, NAPIER
ZL2FB HUNT, R, 9 ARROWFIELD DRIVE, PYES PA, TAURANGA
ZL2FC COUTTS, C G, 12 PAIERAU ROAD, R.D.1, MASTERTON 5901

ZL2FD BUTEL, D, 39 MULBERRY ST, LOWER HUTT
ZL2FDH DE HAIR, F, 29 TRURO ROAD, CAMBORNE, PORIRUA
ZL2FE FALKNER, B A, 49 KARINA TCE, PALMERSTON NORTH
ZL2FF HAYWARD, R S, 17 YORK STREET, MOTUEKA
ZL2FFR BEVAN, B, 151 EASTERN HUTT ROAD, POMARE, LOWER HUTT WELLINGTON
ZL2FG TORRIE, A W, 25 TARANAKI STREET, ST JOHNS HILL, WANGANUI
ZL2FH GARTH, P E, 1001 WHAREKOPAE RD, R D 2, GISBORNE
ZL2FJ WITHY, D G, 16 KENMORE ST, WELLINGTON
ZL2FM BURR, E J, 87 STANLEY RD, GISBORNE
ZL2FN WILLIAMS, E F, 31D LIFFITON ST, WANGANUI
ZL2FO HAWTREE, V, 50 FOX RD, WANGANUI
ZL2FOR O'RORKE, F A, 50 MATAI ROAD, RAUMATI SOUTH
ZL2FOX CLAYDON, A C, 10A RANGITAHI STREET, OTOROHANGA
ZL2FP GEORGE, S B, 7 TE WHENA PLACE, WAITARA
ZL2FQ BURGOYNE, T A, 3 SHAKESPEARE WALK, NELSON
ZL2FR DYETT, N D, 71 COUTTS ST, WELLINGTON
ZL2FRG CLARKE, J O, 17 LONGFELLOW STREET, TRENTHAM, UPPER HUTT 6007
ZL2FS PRIEST, J R, 26 WOOLCOMBE TCE, NEW PLYMOUTH
ZL2FT WALLACE, J A, 16 OXFORD ROAD, WANGANUI
ZL2FV RICHTER, B E, 706D PIONEER HIGHWAY, PALMERSTON NORTH
ZL2FW HARBIDGE, L W, 1B ROMNEY SQUARE, TAWA, WELLINGTON
ZL2FWE SWARBRICK, A, 2 HUNTER AVENUE, RICHMOND, NELSON
ZL2FWF FUCHS, F W, 9 CHESTNUT GROVE, MAUNGARAKI, LOWER HUTT
ZL2FX BILLINGTON, S G, 28 HERBERT AVE, PALMERSTON NORTH
ZL2FY HARKETT, R J, 125 HELSTON RD, JOHNSONVILLE, WELLINGTON 6004
ZL2FZ REEVE, R P, 5 EGINTON STREET, MOTUEKA
ZL2GA JOHNSON, D F T, 7 PINEHAVEN ROAD, UPPER HUTT
ZL2GAF FLETCHER, G, 190 BREAKER BAY ROAD, SEATOUN, WELLINGTON
ZL2GAZ JAMES, G B, 7 JAMES FOLLEY AVE, PIRIMAI, NAPIER
ZL2GB LITTLE, Allen J, 7 EARL ST, LEVIN
ZL2GC RUANE, M, PO BOX 31-280, LOWER HUTT
ZL2GCH HARDGOOD, G C,
ZL2GD DANIEL, A G,
ZL2GE EVANS, G R, 30 MARGARET ROAD, RAUMATI BEACH 6010
ZL2GEM CLARKE, G E, 57 KAURI STREET, MIRAMAR, WELLINGTON 6003
ZL2GEO GIRLING, G F, 4 OLDFIELD PLACE, BULLS
ZL2GER WILLEMSEN, G A, 113 JELLICOE STREET, R D 1, MARTINBOROUGH 5954
ZL2GF WATERS, R J, 32 TAFT ST, WELLINGTON
ZL2GG WATERS, R J, 32 TAFT ST, WELLINGTON
ZL2GH HUBERTS, G H, 2 KAURI CLOSE, 10 WELCOME BAY ROAD, TARANGA
ZL2GI GILBERT, W M, 146 LIVERTON ROAD, BELMONT, LOWER HUTT 6009
ZL2GK MOTUEKA BRANCH NZART, PO BOX 218, MOTUEKA
ZL2GKK Kulma, George Kazimir, 167 Vivian Sreet, New Plymouth
ZL2GL LAWN, G, 3 KIMIORA CLOSE, FAIRVIEW DOWNS, HAMILTON
ZL2GM MCLEAN, G M, 107 RICHMOND ST, PETONE
ZL2GMP POLLOCK, G M,
ZL2GN MALABAR, R S, 9 MESSENGER TCE, OAKURA
ZL2GO BLACKLEY, L C, 26 KAITAWA CRES, PARAPARAUMU 6450
ZL2GP COLE, G P, 58 WOODHOUSE AVE, KARORI, WELLINGTON
ZL2GQ TOPLISS, P G, 7 VICTORIA HEIGHTS, NELSON
ZL2GRE GREENWOOD, P, WILLOWPARK DRIVE, RD11, MASTERTON
ZL2GRI CRONE, W G, 298B KAHUTIA ST, GISBORNE
ZL2GRM TRIM, G, 79 NAPIER TCE, NAPIER
ZL2GRZ ZAMBON, G R, 1A JOSEPH GROVE, UPPER HUTT
ZL2GS LEGG, J B, 30 LYTTON STREET, FEILDING 5000
ZL2GSW ADLAM, R A, 174 BRIDGE ST, BULLS 5452
ZL2GSX EYRE, W B M, 174 BRIDGE STREET, BULLS
ZL2GT NAPIER AMATEUR RADIO CLUB INC, 54A AUCKLAND ROAD, GREENMEADOWS, NAPIER
ZL2GTB BLEWETT, Gordon, 1315 HASTINGS RD, RD 21, STRATFORD 4700
ZL2GV HUTTON, J D, 1275 PAPAMOA BEACH ROAD, PAPAMOA, TAURANGA 3003
ZL2GVA VAN ANTWERPEN, G, 137 VICKERMAN STREET, GROVETOWN, BLENHEIM
ZL2GWD WILSON, GRAEME, 629 STATE HIGHWAY 60, RD 2 PURAMAHOI, TAKAKA
ZL2GWL LANE, G W, 75 BEAUMARIS CRES, ASCOT PARK, PORIRUA
ZL2GY TAILLIE, L I, 8 FINDLAY ST, MANGAWHAI 0583
ZL2HA GENTRY, L J, 8 CHUDLEIGH GROVE, WELLINGTON
ZL2HB STEPHENS, D A, 2 RIVERBEND RD, NAPIER
ZL2HBC CHANDLER, H B, 34 KEITH ST, PALMERSTON NORTH
ZL2HC DOBSON, H M C,
ZL2HD ANDREWS, J R, 66 KHANDALLAH RD, KHANDALLAH, WELLINGTON 6004
ZL2HE LAW, A E, P O BOX 368, DANNEVIRKE 5491
ZL2HEM HUMPHREYS, E M, 16 FERGUSSON STREET, STOKE, NELSON
ZL2HF LEWTON, P E, 11 JOHNSTON GROVE, LOWER HUTT
ZL2HG HALLIGAN, G, 35 SAINT JOHNS AVENUE, PALMERSTON NORTH
ZL2HGR DIXON, M T R,
ZL2HH HARRIS, H B, RD 4, MT ADDE, BLENHEIM
ZL2HI DILLON, J P, 7 WILFORD ST, LOWER HUTT
ZL2HIS SUTHERLAND, N, 73 HALIFAX STREET, NELSON
ZL2HJ GARRETT, W E A, VILLA 6, MOLLY RYAN RETIREMENT VILLAGE, 269 MARJORIE ROAD, NEW PLYMOUTH
ZL2HJS Sims, Hayden, 16 KIMBEREBLY GROVE, PALMERSTON NORTH
ZL2HK WAKELY, J R, 109 MT VIEW RD, WANGANUI
ZL2HL BARRY, N W, 20 GLADSTONE ST, HAWERA
ZL2HM MOORE, PETER R, 190 PLATEAU ROAD, UPPER HUTT
ZL2HO WARNER, B A, 23 CITY VIEW GROVE, HARBOUR VIEW, LOWER HUTT
ZL2HP WATKINS, A L, 1/26 OUTRAM GROVE, KELSON, LOWER HUTT 6009
ZL2HPK KEMP, H P, 36 ABERFELDY STREET, PORIRUA
ZL2HR BEATTIE, P, 43 GORDON ST, LOWER HUTT
ZL2HRL LIGHTWOOD, H R, 137A HOSPITAL ROAD, BLENHEIM 7301
ZL2HS ROTTMAYER, T, 34A ADAMS LANE, BLENHEIM
ZL2HT HOOKER, D D, 1A REEVE DRIVE, HAVELOCK NORTH
ZL2HU HOLDOM, K A, PO BOX 7, CLYDE 9180
ZL2HV NZART HUTT VALLEY BRANCH INC, PO BOX 30-519, LOWER HUTT
ZL2HW MARSH, N O,
ZL2HWA HAWERA AMATEUR RADIO CLUB, 126 FAIRFIELD RD, HAWERA 4800
ZL2HY DEVENPORT, B, 1782 WHARERATA RD, R D 2, GISBORNE
ZL2HZ MACKIE, A J, 8 TARATA STREET, STOKE, NELSON
ZL2IA CAMERON, R W, 34 BUDGE STREET, BLENHEIM
ZL2IAN THOMPSON, I, 8 DAMPIER AVE, PALMERSTON NORTH
ZL2IAS SWAIN, I A, Po Box 198, CARTERTON, WAIRARAPA
ZL2IB TARARUA DISTRICT RADIO CLUB, C/0 ROSEWOOD VILLA (ATTN. S COOPER), 24 YORK STREET, HILLCREST, DANNEVIRKE 5491
ZL2IC HOLLAND, D J, 16 MAIRE STREET, TAHUNANUI, NELSON
ZL2ICE HANLON, I E, 17 MT VIEW PLACE, NEW PLYMOUTH
ZL2ID APPLETON, C, 16 MERIDIAN GROVE, KELVIN GROVE, PALMERSTON NORTH
ZL2IDM MCKERCHER, I D, 39A MILFORD STREET, WITHERLEA, BLENHEIM 7301
ZL2IFA ANDREWS, I F, 43A AUGUST STREET, STOKES VALLEY, UPPER HUTT
ZL2IFB HINSON, G, 27C KAIKOURA STREET, MAUPUIA, WELLINGTON
ZL2IH HAYTON, I D,
ZL2IHW WHITE, I H, 5 HILLSIDE CRES, NEW PLYMOUTH
ZL2II CALDWELL, D G, 88 JUBILEE RD, WELLINGTON
ZL2IJ EASTWOOD, R J, 63 SHEPHERD RD, TAUPO
ZL2IK MULHARE, P J, PIPIWAI RD, R D 6, WHANGAREI 0121
ZL2IM BROWN, P W, 20 NEVADA DRIVE, NEW PLYMOUTH
ZL2IMM MCLACHLAN, I M, 15 TOLERTON AVE, GISBORNE 3801
ZL2IN CRUMPTON, R E, 27 KAPITI CRES, TITAHI BAY 6006
ZL2IO COLLINS, E S, RD 1, MAIN ROAD, WAKAPUAKA, NELSON
ZL2IOX HOLDER, S M, 3 TIRIMOANA PLACE, TE AWANGA 4250
ZL2IP BARNES, E J, 790 DURHAM RD, R D 8, INGLEWOOD
ZL2IQ WILLS, M J, PO BOX 31-227, LOWER HUTT
ZL2IR CUTTRISS, N A, 2 MELDRUM ST, NAENAE, LOWER HUTT
ZL2IS WERE, G, 180 REGAN ST, STRATFORD
ZL2IT LILLEY, E C C, 1B HARVEY RD, NAPIER
ZL2IV GORMAN, D D, C/- D BEBAN, 9 TRINITY AVENUE, LOWER HUTT 6009
ZL2IW CARTER, R S, 24 CLYDE STREET, RENWICK
ZL2IX PARKER, C H, 24 TIRAUMEA RD, PAHIATUA
ZL2IY GORMAN, T D, 51 TAKAPAU ROAD, MANAKAU, LEVIN
ZL2IZ BARTLEET, J R, PO BOX 2209, GISBORNE
ZL2JA WANGANUI BRANCH NZART, C/O 1 CAVERSHAM RD, WANGANUI
ZL2JAD DUNLOP, J A, 105 KELBURN PDE, KELBURN, WELLINGTON
ZL2JB RAWIRI, B R M, 165 TAYLOR STREET, BLOCKHOUSE BAY, AUCKLAND
ZL2JBR BRADER, J M, 22A MAWSON ST, LOWER HUTT
ZL2JBS Stevenson, Jason, 13 Armour Place, Marewa, Napier
ZL2JC CLELAND, W J, 574C ARANUI ROAD, NO 5 RD, KAIRANGA, PALMERSTON NORTH
ZL2JD DUNCAN, J R, 7 CROWN HILL, TITAHI BAY
ZL2JDB BARNHILL, J D, PO BOX 27-239, WELLINGTON
ZL2JDM MANUEL, J D, 49 BATTERY RD, NAPIER

ZL2JDW Craig, Jason, 17 Mouatt St, Waitara, New Plymouth
ZL2JE MORISON, R D, 40 OREGON DRIVE, TAUPO 2730
ZL2JEL LOVE, J E, 20 BOMBAY ST, ARAMAHO, WANGANUI
ZL2JEN MacDonald, J, 39 Aniseed Grove, Timberlea, Upper Hutt
ZL2JF GREATBANKS, J, 907 HARDING RD, HASTINGS
ZL2JG ANDERSON, G A, 20 LEYBOURNE AVENUE, WAIKANAE 6010
ZL2JH NICOL, D S, 93 HEWITTS RD, RD 4, PALMERSTON NORTH

ZL2JI THOMPSON, J P, 1 HEALEY PLACE, GISBORNE
ZL2JJ BYAM, S P, RD 2, WAVERLEY
ZL2JK BUTLER, D B, TAVINOR ROAD, OTAIKA VALLEY, RD10, WHANGAREI
ZL2JKP LEACH, FOSS, 2324 QUEEN CHARLOTTE DRIVE, NGEKUTA BAY, R D 1 PICTON
ZL2JKS SORENSEN, J K, 57 HETA RD, NEW PLYMOUTH
ZL2JKY GOULD, A J, 9 NORMAN BENSEMAN PLACE, TAKAKA
ZL2JL SWAN, K C, 40 SMITH STREET, WAVERLEY 5182, WANGANUI
ZL2JLB BRADOCK, J L, 31 PIER C, MANA MARINA, MANA
ZL2JM MORRISON, J F, 27 MULGRAVE ST, ASHHURST
ZL2JMA HULSE, D J, 86A BALRUDRY ST, AVONHEAD, CHRISTCHURCH
ZL2JMG GIBSON, J M, C/O JOHN MCCAFFERTY 19 WALTER ROAD, LOWRY BAY, EASTBOURNE
ZL2JMN NEIL, JUDY, P O BOX 9, PICTON
ZL2JN HODDER, A A, 394 SOMME PARADE, WANGANUI
ZL2JO LAMBERT, N H, 7 SUNBRAE DRIVE, SILVERSTREAM
ZL2JOE ABRAHAMS, J D, 1 WILLIS ST, MARTON
ZL2JON ROBINSON, J, 9 WATSON ST, BULLS
ZL2JOS DAMES, J H,
ZL2JP SARTEN, C J, 212 CORONATION AVE, NEW PLYMOUTH
ZL2JPL WATKINS, A S R, PO BOX 274, WELLINGTON 6001
ZL2JPW WILLIAMS, J P, 25A IKITARA RD, WANGANUI
ZL2JR ROBERTSON, J, 100 CLUNY RD, PLIMMERTON
ZL2JS SMART, J, 2 TOMBANE LANE, PAPAKOWHAI, PORIRUA
ZL2JSB BARNES, S, 31 BROOKLANDS ROAD, ATAWHAI, NELSON

ZL2JSW Wooding, Joshua, 132 Scott Street, Blenheim
ZL2JT MACKIE, J B, 8 TARATA STREET, STOKE, NELSON
ZL2JTH THORNTON, J P, 30 STAFFORD STREET, WANGANUI
ZL2JUE Schulz, Jurgen, 32a Bedford Street, Wilton, Wellington
ZL2JW TEBBUTT, J W,
ZL2JX HODGSON, E R, 20 COLOMBO ST, PALMERSTON NORTH

ZL2JY VINCENT, G C, 124 UNION STREET, FOXTON
ZL2JZ JURY, E G, PONATAHI RD, RD 2, CARTERTON
ZL2KA COLEY, D, 8 APOLLO PARADE, MILSON, PALMERSTON NORTH
ZL2KAS SPINKS, K,
ZL2KB NZART KAPITI BRANCH INC, C/O G R Evans Secretary Kapiti Branch 69 NZART, 30, Margaret Road, Raumati Beach
ZL2KBK HEARNE, W R, 56 ABRAHAM HEIGHTS, NELSON
ZL2KC BISSET, K T, 24 GREY ST, MARTON
ZL2KD KEEGAN, R J, 11 MALAGHAN GROVE, WELLINGTON
ZL2KEL BIRCH, F K, 206 PUHI PUHI ROAD, R D 2, HIKURANGI, NORTHLAND
ZL2KEN DEWAR, K D, 7 RICHARDSON AVE, GISBORNE
ZL2KF FELLOWS, S K, 2 DOWLING GROVE, UPPER HUTT
ZL2KFL LANTSBURY, KEITH, 1 AWARUA CRESCENT, HAVELOCK NORTH, HASTINGS
ZL2KG JEPSON, S J,
ZL2KH SYMON, D R, 25 ANNANDALE ST, NEW PLYMOUTH
ZL2KI IRELAND, K J, 2 OSLO PLACE, LEVIN
ZL2KID CHANDLER, A J M, 4 TYNE STREET, ROSLYN, PALMERSTON NORTH
ZL2KJ MCQUEEN, K J, DUNCAN STREET, RD 9 TAUWERU, MASTERTON
ZL2KJG Gregory, K, 11 Sunset Terrace, Waikanae
ZL2KK KERR, R F, 51 Rayner Road, Huntly
ZL2KKA ANDERSON, K, 31 LEVANT ST, PORIRUA
ZL2KL Brucesmith, Alexander, 123 Rakau Road, Hataitai, Wellington
ZL2KM MOORE, K J, P O BOX 300 155, ALBANY, NORTH SHORE 1330
ZL2KN TRAINOR, A P T, 118 DIMOCK ST, TITAHI BAY
ZL2KO NZART MANAWATU BRANCH INC, PO BOX 1718, PALMERSTON NORTH
ZL2KOT KENDRICK, K R, 33 MANU CRES, NEW PLYMOUTH
ZL2KP PRIOR, R T, PO BOX 1169, BLENHEIM
ZL2KQ LARSEN, K, RD 44, URENUI
ZL2KR ALLEN, J G, 95 MANUKA ST, WANGANUI
ZL2KS NZART MARLBOROUGH BRANCH 22 INC, PO BOX 432, BLENHEIM
ZL2KT BROOKER, R G, VILLA 39, SOMMERSET VILLAGE, TE MATA ROAD, HAVELOCK NORTH, HASTINGS
ZL2KUZ SPINDOR, B, 105 ORANGI KOUPAPA RD, NORTHLAND, WELLINGTON 6005
ZL2KV MARTIN, C J, MOUNTAIN RD, R D 10, INGLEWOOD
ZL2KW BETTERIDGE, O J, 2/64 GLOUCESTER STREET, NAPIER
ZL2KWI MANZE, J A, F10/4 DERBY ST, MT VICTORIA, WELLINGTON
ZL2KX JOHNSON, J F C, 15 FIELD ST, UPPER HUTT
ZL2KZ KINGSTON, G, 53 TANNADYCE ST, WELLINGTON
ZL2LA VIVIAN, B A, 399 MANGOREI RD, NEW PLYMOUTH
ZL2LAB VIDULICH, M J, 219 AUCKLAND RD, MISSION VIEW, NAPIER
ZL2LAW WINTON, L J, 8 ESK STREET, ROSLYN, PALMERSTON NORTH
ZL2LB MILNER, M O, 21 RANGATIRA RD, TAWA
ZL2LC CHAPMAN, M A, 124B Edgecumbe Road, TAURANGA
ZL2LD MUNN, P M, PO BOX 446, MASTERTON 5915
ZL2LDX LAUDER, C D, 115 MAUNGARAKI ROAD, KOROKORO, LOWER HUTT
ZL2LE WHITE, L M, PO BOX 1119, HASTINGS
ZL2LF DINGLEY, P D, 8 VOGEL PLACE, MAREWA, NAPIER
ZL2LG DUNNING, S P, 17 KANPUR ROAD, BROADMEADOWS, WELLINGTON 6004
ZL2LGB BENNETT, L G, 89 HUATOKI STREET, NEW PLYMOUTH
ZL2LH WAKEFIELD, M J, 5 GILLESPIE STREET, TAITA, LOWER HUTT
ZL2LHW UPPER HUTT BRANCH NZART INC, C/- 35 MATAI ROAD, RAUMATI SOUTH 6010
ZL2LI INKPEN, L W,
ZL2LIN ROBERTS, L S, 188 NIKAU ST, HASTINGS
ZL2LJ O'GRADY, P L, 18 BROOKVALE VILLAGE, PARAPARAUMU

ZL2LJR ROBERTSON, L J, 15 ST JOHNS AVE, PALMERSTON NORTH
ZL2LK TAYLOR, T J A, 37 RIVERSDALE DRIVE, NEW PLYMOUTH
ZL2LKS SHOTTON, L K, 58A GERALDINE CRES, PALMERSTON NORTH
ZL2LL SUTHERLAND, C I, 28 VENICE STREET, MARTINBOROUGH 5954
ZL2LM MERRICK, L F, 22A BLEDISLOE AVENUE, STOKE, NELSON

ZL2LMJ JOUBERT, L M, P O BOX 31431, MILFORD, AUCKLAND
ZL2LN DAVENPORT, N B, 4 WAKATU PLACE, MOTUEKA
ZL2LNX Lynch, D J W, 2 Vivian St, Masterton
ZL2LO KERR, C M, 10 SMART TCE, WANGANUI
ZL2LQ COOTE, D, 19 CORLETT RD, PLIMMERTON
ZL2LR REID, L R, 19A ROSLYN RD, NAPIER
ZL2LS SCOTT, L A, 74 DODSON VALLEY ROAD, ATAWHAI, NELSON
ZL2LSD CURRAN, B, PO BOX 40, PUNGAREHU
ZL2LT STEWART, J E, 11A HARTFORD CRES, TOTARA PARK, UPPER HUTT 6007
ZL2LTC Carr, Lawrence, 39 Fraser Drive, Feilding
ZL2LUK WILTON, L J, 88 CORNWALL ST, MASTERTON
ZL2LV RYAN, J F, 44 SYLVAN AVENUE, WAIKANAE 6010
ZL2LX MOTION, R, 2A HAZEL TCE, TAURANGA
ZL2LY LAWSON, C, 114 HOSPITAL ROAD, BLENHEIM
ZL2LYN MCQUEEN, LYNDON, 23 TAWA STREET, MASTERTON
ZL2LZ RUMSEY, J R, 51 FREYBERG ST, WELLINGTON
ZL2MA HUGHES, D C, 1745 MAIN ROAD, MAXWELL, RD4, WANGANUI 5021
ZL2MAB WILSON, TANYA, P O BOX 2409, STORTFORD LODGE, HASTINGS
ZL2MAC MCCULLOCH, G L, KOROMIKO, RD 3, BLENHEIM
ZL2MAD DAWKINS, M, 3 RADFORD WAY, HILLSBOROUGH, AUCKLAND
ZL2MAT MAWSTON, M, 11 CHURCHILL CRESCENT, GONVILLE, WANGANUI
ZL2MAW Wiggins, M A, 23 Slacks Road, Riverdale, Palmerston North

ZL2MAX WHEATLEY, M J, 150 WYNDHAM STREET, ASHHURST 5451
ZL2MB MONTGOMERIE, J C, 11 GARDINER PLACE, HAVELOCK NORTH
ZL2MBF FRANCIS, B, 31 CLEMOW RD, NEW PLYMOUTH
ZL2MBS BURRELL-SMITH, M L C,
ZL2MC COOK, M J, 58 HEWITTS RD, WOODEND 8255
ZL2MCG GORE, M C, 1 HULME ST, PALMERSTON NORTH
ZL2MD WHITTINGTON, A, 46 HAYDON STREET, ROSLYN, PALMERSTON NORTH
ZL2MDX BURGE, T, 695 SCARBOROUGH RD, PAHIATUA
ZL2ME SARTEN, D M, 212 CORONATION AVE, NEW PLYMOUTH
ZL2MEP PLEWINSKI, M E, 3 BYRON STREET, UPPER HUTT
ZL2MF FRENCH, M J, KINGFISHER LODGE, 122A WORK ROAD, R.D. 2, KATIKATI 3063
ZL2MG WAIMARINO BRANCH NZART, 5 MAIN RD, WAIOURU
ZL2MGA HILL, M, 25A WOODMANCOTE RD, KHANDALLAH, WELLINGTON 6004
ZL2MGD DUNCAN, M, 67 GUILDFORD DRIVE, PARAPARAUMU 6010, KAPITI COAST
ZL2MGW Wooding, Maxwell, 132 Scott Street, Redwood Town, Blenheim
ZL2MH NEAL, E W, 2A TRINITY PLACE, PARAPARAUMU BEACH, PARAPARAUMU
ZL2MHC CAIRNS, M H, 4 TERRACE ST, WANGANUI
ZL2MI MCCULLOCH, J G, 81 KEMP ST, WELLINGTON
ZL2MIC CAMPKIN, M I, 25 PARATUTU ST, NEW PLYMOUTH

ZL2MJ MCCOLLOCH, JOSHUA, 6 GIFFORDS CREEK LANE, RAPAURA, RD3
ZL2MJL LAWN, M J, 2 KIWI PLACE, TAWA, WELLINGTON 6006
ZL2MK KIRKNESS, M A, 54 RIMU ST, WANGANUI
ZL2MLS SAVAGE, M L, 22 FIRTH TCE, KARORI, WELLINGTON
ZL2MM DWYER, M B, PO BOX 7313, WELLINGTON SOUTH
ZL2MN MEYER, L H, 23 CANTERBURY ST, NAPIER
ZL2MO BROWN, N L, 72 KAPANUI RD, WAIKANAE
ZL2MOT MOORCROFT, T K, 14 PINE ST, GISBORNE
ZL2MP COLLEY, M J, 23 CHURCHILL AVENUE, RICHMOND
ZL2MPW WALKER, M P, 174 WATERSHED ROAD, RD10, HIWINUI, PALMERSTON NORTH
ZL2MQ CROOK, D J, 14A HARVEY ROAD, NAPIER
ZL2MQH PACKER, B A, 10 PATNA STREET, NGAIO, WELLINGTON
ZL2MR RYAN, M D,
ZL2MRE POTTS, M R E, 4 WAIWERA PLACE, NEW PLYMOUTH
ZL2MS CHAMBERS, P, 6 ELIZABETH PLACE, CLIVE, HAWKE'S BAY
ZL2MSW WOGAN, M,
ZL2MT RAILTON, G H, 15 CHUDLEIGH GROVE, CHURTON PARK, WELLINGTON
ZL2MTH HODGKINSON, M T, 19 THIRLMERE STREET, WAINUIOMATA, WELLINGTON 6008
ZL2MU JUPP, A L, 1 PROTEA PLACE, BELL BLOCK, NEW PLYMOUTH
ZL2MUD BRETHERTON, P D, 5 TACOMA DRIVE, TOTARA PARK, UPPER HUTT
ZL2MUF PAWSON, S R, PO BOX 186, MASTERTON
ZL2MUI BADRICK, R, 3 SORRENTO WAY, SILVERSTREAM, UPPER HUTT
ZL2MV BRENCHLEY, G C, 98 MOORAY AVENUE, BISHOPDALE, CHRISTCHURCH
ZL2MVH HEARNE, M V, 56 ABRAHAM HEIGHTS, NELSON
ZL2MW RUDDY, M W, 23B WALBROOK ROAD, MANLY, WHANGAPARAOA
ZL2MX LAWN, M E, 60B GOVETT AVE, NEW PLYMOUTH
ZL2MYT SUTTON, A C, 444 BACK ORMOND RD, R D 1, GISBORNE

ZL2MZ POOL, B L, 9 REMBRANDT AVE, LINDEN
ZL2NA FAUCHELLE, J B, KINA BEACH, RD 1, UPPER MOUTERE
ZL2NAA HOOPER, D R, 74/5 WOOD STREET, PALMERSTON NORTH
ZL2NAK KNAPTON, N A, 16 GRANT STREET, HAVELOCK NORTH, HAWKES BAY
ZL2NAP PUKLOWSKI, N A, 127 NORTH ST, ASHHURST
ZL2NBR JAMIESON, A D, 2 WAIPUNA STREET, BLENHEIM
ZL2NC DUGAN, R F, 20 KURATAWHITI STREET, GREYTOWN 5953

ZL2ND FOSTER, N, 803 FRANCIS HICKS AVE, ST LEONARDS, HASTINGS
ZL2NE DOUGLASS, W S, 58 HALDEN CRESCENT, SPRUCE GROVE, ALBERTA T7X 2V6
ZL2NER ROBSON, N E, 115 NAYLAND ROAD, STOKE, NELSON
ZL2NF FRAZER, G C, 14 HINTON RD, TARADALE, NAPIER
ZL2NG AKED, M S, 6 SOMERSBY COURT, MIDLANDS, PARAPARAUMU 6010
ZL2NH BAYLY, R B, 91 LYTTON RD, GISBORNE
ZL2NI DUMBLETON, G W, 4 STORMONT PLACE, KINGSTON, WELLINGTON 6002
ZL2NJ TARRANT, P E, PO BOX 55, WANGANUI
ZL2NK KATO, N, 16 Kimberley Grove, Highbury, Palmerston North
ZL2NL NAVA, L A, P O BOX 247, KAIKOHE
ZL2NM STEWART, H A S, 41 TAUTAHANGA RD, TURANGI
ZL2NN PYE, J C, 63 THACKERAY STREET, UPPER HUTT
ZL2NO GRACE, K E, 9 TE ARA RD, PUKERUA BAY
ZL2NP SMITH, F J A, 21 OTATARA RD, TARADALE, NAPIER
ZL2NQ EVAROA, D T, APPLEBY RD RD 1, DRURY
ZL2NR RUBERY, T F, 3 MCDONALD PLACE, MARTON
ZL2NS DOUCHE, W P, 142A MAIN RD NORTH, WAIKANAE 6454
ZL2NT DOUCHE, 35 JICKELL STREET, PALMERSTON NORTH
ZL2NV JOHNSTON, A F, UNIT 9, 357 QUEEN STREET, RICHMOND

ZL2NW SWARBRICK, W, 2 HUNTER AVENUE, RICHMOND, NELSON
ZL2NX KIWI CONTEST GROUP, C/O MR TJ HOGAN, PO BOX 39-166, WELLINGTON MAIL CENTRE, WELLINGTON
ZL2NY RAMSAY, JANETTE, 114 AUPAKI ROAD, RD11, HASTINGS

ZL2NZ MILNER, G L, 21 RANGATIRA RD, TAWA
ZL2NZL WOOD, L R L, 118 BROWNE ST, WAITARA
ZL2OA WAIRARAPA AMATEUR RADIO CLUB INC, PO BOX 860, MASTERTON
ZL2OAK KEMSLEY, T R, 6 DONNELLY STREET, OAKURA 4650
ZL2OALH WAIRARAPA AMATEUR RADIO CLUB INC, PO BOX 860, MASTERTON
ZL2OB O'BRIEN, D P, 133 MAKINO RD, FEILDING
ZL2OD COOMBE, H W, 31 LINKLATER AVE, FOXTON BEACH
ZL2OF PENTELOW, L C, RD 31, KINA RD, OPUNAKE
ZL2OG CHISNALL, R R, NATIVITY COURTS, 4D HENRY STREET, BLENHEIM 7301
ZL2OH MCMILLAN, W I, 67 BLUEGUM RD, PARAPARAUMU BEACH 6010

ZL2OHM LITTLE, Allen J, 7 EARL ST, LEVIN
ZL2OL SIGGLEKOW, R W, 9 RAUKAWA ST, STOKES VALLEY
ZL2OM MANNING, S C, 87A WAIMEA ST, NEW PLYMOUTH
ZL2OPB BARRIBALL, O P, 23A PORT VIEW CRESCENT, MOTUROA, NEW PLYMOUTH
ZL2OR OSBORNE, D O, 9 GREENOCK PLACE, PALMERSTON NORTH
ZL2OV LEE, W C, 11 HENDERSON ST, WELLINGTON
ZL2OX VAN DER HEYDEN, N, 99 OXFORD RD, OKATO, TARANAKI

ZL2OY BLACKWOOD, R L, 245 MAIN ROAD, TAWA, WELLINGTON 6006
ZL2OZ JACOBSEN, W J, 10 EMPIRE ST, DANNEVIRKE
ZL2PA MEEK, P, F3/68A GUPPY RD, GREENMEADOWS, NAPIER
ZL2PB MCLAREN, B B, 14 QUEBEC ROAD, NELSON
ZL2PC COWLEY, P N, 27B MANA ESPLANADE, MANA, WELLINGTON
ZL2PCG GOULTER, P C,
ZL2PD WOODFIELD, A O J, 24 BEVERLEY ST, ST ALBANS, CHRISTCHURCH 8001
ZL2PDJ DE JOUX, P E I, 33 DOMINICA CRES, GRENADA VILLAGE, WELLINGTON
ZL2PE GROVE, P E, 244 TAITA DRIVE, AVALON, LOWER HUTT
ZL2PET PETRI, A, 45 BEAVEN STREET, MARTON
ZL2PF FARRELL, P J,
ZL2PFH HARRIS, P F, 19 CAMPBELL ST, FEILDING 5600
ZL2PG LAIRD, A K, 24 PATRICK ST, PETONE
ZL2PGJ TSURUTA, K, 24 KINGSLEY STREET, GISBORNE
ZL2PH MARSH, P, 40 BRANCH RD, HIGHLANDS PARK, NEW PLYMOUTH
ZL2PI GAUDIN, S L, 18 TRAFALGAR ST, NEW PLYMOUTH
ZL2PIH KIM, D, 37 DUBLIN STREET, WANGANUI
ZL2PIP HARRIS, P A, MT ADDE, R D 4, BLENHEIM 7321
ZL2PJ SPELLMAN, P J, 36 RECORD ST, NEW PLYMOUTH
ZL2PJC CREEDY, P,
ZL2PKB BEAUMONT, M, 2 RAWHITI RD, PUKERUA BAY, PORIRUA

ZL2PKJ JOHNSTON, P K, 3/126 FOURTEENTH AVE, TAURANGA
ZL2PL YOUNG, C T, 3A PRINCETON RD, RAUMATI BEACH 6450
ZL2PM APPLEYARD, B H, 13 MOLE ST, GREYTOWN
ZL2PMQ APPLEYARD, 28 CROMPTON ROAD, MASSEY, WAITAKERE 1008
ZL2PN NIXON, P A, 194 FRANKLEY RD, FRANKLEIGH PARK, NEW PLYMOUTH
ZL2POS PURCELL, C R,
ZL2PP JACK, P F, 3/43 Templemore Drive, Richmond, Nelson
ZL2PQ SAYER, L A, 49B PEACH RD, GLENFIELD
ZL2PRO ORSBORN, P, 325 UPPER PITONE ROAD, R D 4, NEW PLYMOUTH
ZL2PRS SIMMONS, P R, P O BOX 5034, SPRINGLANDS, BLENHEIM
ZL2PS Stade, John Frederick, 322 High St, Motueka
ZL2PT INGLEWOOD BRANCH 19 NZART, C/- EMO, 45 ROBE STREET, NEW PLYMOUTH
ZL2PTR RIPLEY, P, 79B NGAIO RD, WAIKANAE
ZL2PU PYE, J T, 63 THACKERAY STREET, UPPER HUTT
ZL2PV MOLONY, M, 66 LONGFELLOW ST, UPPER HUTT
ZL2PX TAYLOR, M F W, 25B TAYLOR AVENUE, PAEROA, WAIKATO
ZL2QA KERMEEN, L V, 8 PONY LANE, SPREYDON, CHRISTCHURCH
ZL2QB WENZEL, K D, RD 1, UPPER MOUTERE
ZL2QF NZART PATEA BRANCH INC, PO BOX 156, HAWERA
ZL2QG BRUNTON, W R, 98 HOSPITAL ROAD, BLENHEIM
ZL2QH WELLINGTON AMATEUR RADIO CLUB INC, NZ ASSOCIATION OF RADIO TRANSMITTERS, P O BOX 40525, UPPER HUTT
ZL2QK KENNY, E J, 14 WILDISH COURT, KAITI, GISBORNE
ZL2QM BURRY, J P P, 908 CAROLINE RD, HASTINGS 4201
ZL2QN BURRELL, G A,
ZL2QP MCNEIL, W G, 86 DOMETT ST, OPUNAKE
ZL2QQ COOK, S A, AWAKINO RD, RD 1, TE KUITI
ZL2QR ABEL, A J, 20 RANFURLY RD, FEILDING
ZL2QT HANNAGAN, C A, FRATERS ROAD, R D 1, MARTINBOROUGH 5954
ZL2QX ROBINSON, D M, PO BOX 6147, ROTORUA
ZL2QY MCLEAN, P A, C/O NZMCA MAIL DROP, P O BOX 72 147 PAPAKURA, AUCKLAND
ZL2QZ WRIGHT, B E,
ZL2RA MANTELL, R A, 33 KAHU ROAD, PAREMATA, PORIRUA
ZL2RAE CHRISTIAN, R K, 4 SNOWDEN AVENUE, PALMERSTON NORTH
ZL2RAS SUDLOW, R A, 154 STATE HIGHWAY 10, COOPERS BEACH YOUTH CAMP, MANGANUI
ZL2RC SEWING, R, PO BOX 620, GISBORNE
ZL2RD WILLS, R E, 30 CITY VIEW GROVE, LOWER HUTT
ZL2RDH HARWOOD, R D, 187 MATAI RD, RAUMATI BEACH
ZL2RDM MURRAY, R D, 101 FREDRICK ST, HASTINGS
ZL2RE RENNIE, P W G, 64 PARK TERRACE, BLENHEIM
ZL2REJ JOHNSTON, R E, 9 MEADOWS AVENUE, WIAWHETU, LOWER HUTT
ZL2RF FLETCHER, A E, 480 FERGUSSON DRIVE, UPPER HUTT

ZL2RFL Leicester, Rob, 114 Brookfields Road, Pakowhai RD3, Napier
ZL2RG NIXON, P A, 194 FRANKLEY RD, FRANKLEIGH PARK, NEW PLYMOUTH
ZL2RGW WRIGHT, R G, 2/41 THE BOULEVARD, SUNNYHILLS, PAKURANGA
ZL2RH HIGHMAN, R E, 51 BLACKWOOD DRIVE, WATTLE COVE, MANUREWA, AUCKLAND
ZL2RHD DUFFIELD, RUTH, 16 GRANT STREET, HAVELOCK NORTH, HAWKES BAY
ZL2RI MAIN, S G, 24 KINGSLEY ST, GISBORNE
ZL2RIC COLEMAN, R A, 12 GRUNDY ST, GISBORNE
ZL2RIG GIBSON, R I, 31 HOBART ST, WELLINGTON
ZL2RJ HOPGOOD, D J, 33 TRUSCOTT AVE, JOHSONVILLE, WELLINGTON
ZL2RJF FLEMING, R J R, RD 11, FOXTON
ZL2RJP Prentice, Randall, 178 George Street, Stokes Valley, Hutt City
ZL2RK DALLAS, P M, 22 GLAMIS AVE, STRATHMORE, WELLINGTON
ZL2RKA ANTILL, R K, 50 ROSENDALE AVE, NEW PLYMOUTH
ZL2RKL WHITAKER, A J T, 10 RUTHKEN CRESCENT, SPRINGLANDS, BLENHEIM
ZL2RL BERG, B L, 8 WAIKARE AVE, LOWER HUTT
ZL2RM COLLECUTT, G P, R D 2, KAEO 0471
ZL2RMS STUART, R M, 61 LAVAUD ST, BERHAMPORE, WELLINGTON
ZL2RN ROYAL NAVAL AMATEUR RADIO SOCIETY NZ BRANCH, 20 GREENWOOD BOULEVARD, OTAKI 5560
ZL2RNN NEILL, R N, 39 ELLESMERE CRES, PALMERSTON NORTH

ZL2RO THOMAS, L R, 102 EMANO STREET, NELSON
ZL2ROB WALKER, R W, 105A Bryndwr Road, Fendalton, CHRISTCHURCH
ZL2ROG BURDON, R W, C/- 28A GILBERT STREET, BLENHEIM
ZL2RON DANNATT, R, 69 BEAZLEY CRES, TIKIPUNGA, WHANGAREI
ZL2ROO OOSTERLING, R, 37 HUMPHRIES STREET, RD 1, GREYTOWN
ZL2ROS HOLDAWAY, R J, 21 RICHARDSON AVENUE, BLENHEIM
ZL2ROY SEFTON, R C,
ZL2RP PETERS, R E F, 35 GIBLIN STREET, RICHMOND
ZL2RPD DIGNUM, R P, PO BOX 58153, WHITBY, PORIRUA
ZL2RQ DEE, R A, 3 AYRSHIRE DRIVE, GRANDVIEW HEIGHTS, HAMILTON
ZL2RR STEWART, B E, 1 CAVERSHAM RD, MOSSTON, WANGANUI
ZL2RRC GREENWOOD, P, WILLOWPARK DRIVE, RD11, MASTERTON
ZL2RS ROYAL SIGNALS AMATEUR RADIO SOCIETY, C/O C M Kempson, 339b Te Moana Road, Waikanae
ZL2RST GOODE, T, 76 AIRLIE ROAD, PLIMMERTON, PORIRUA
ZL2RT SPACKMAN, J M, 18A MAHANA RD, TE RAPA, HAMILTON

ZL2RVS STOCKER, R V, 1378 BRIGHTON ROAD, DUNEDIN
ZL2RVW SOUTHWART, P D, 5 TOWNLEY STREET, ELGIN, GISBORNE
ZL2RW WHITE, R S, Flat 3, 31 Lancaster St, Napier
ZL2RWE EUSTACE, R W, P O BOX 34, RONGOTEA
ZL2RX WINCER, R A, 302 ATAWHAI DRIVE, NELSON
ZL2RXN NICKEL, ROGER, 60 HOLLOWAY ROAD, MITCHELLTOWN, WELLINGTON
ZL2RY SMITH, S J, 414 ORMOND RD, GISBORNE
ZL2RZ WALL, A M, 8 RANDALL PLACE, NAPIER 4001
ZL2SAM ASHTON, S J, 20 FITZHERBERT ROAD, WAINUIOMATA, LOWER HUTT
ZL2SAW SIMPSON, A W, 79 CRACROFT ST, WAITARA
ZL2SB PETHERICK, E R, 2 DERWENT CLOSE, MIDLANDS VILLAGE, PARAPARAUMU 6010
ZL2SC COMBER, S, PO BOX 5518, LAMBTON QUAY, WELLINGTON 6040
ZL2SD WHITE, R L, 74 NORBITON RD, FOXTON
ZL2SE WHITE, 24 PIRINOA STREET, FEILDING
ZL2SEA GOLDSTONE, N P, PO BOX 351, DRURY, AUCKLAND 1750

ZL2SET WILBY, E A, 5 MATUKU STREET, HERETAUNGA, UPPER HUTT 6009
ZL2SF LEWIS, A W, PO BOX 10-114, THE TERRACE, WELLINGTON 6036
ZL2SG WALLACE, R J, 956 RIVERSLEA RD STH, HASTINGS
ZL2SGN NEILL, S G,
ZL2SGW Warder, Stephen, PO Box 119, Waimauku, Auckland
ZL2SH HARVEY, S R, 11 FLEET STREET, SOLWAY, MASTERTON 5901
ZL2SJ NORDEN, A P, 38 BELL STREET, FEATHERSTON
ZL2SK ADAMSON, D P, OLD KIPS RD, R D 10, PALMERSTON NORTH
ZL2SKB BONNINGTON, S K, 46 AORANGI RD, R D 5, FEILDING
ZL2SKY CHANDLER, A J, 4 TYNE ST, ROSLYN, PALMERSTON NORTH
ZL2SM SMART, L E, 48 LESLIE ST, WAITARA

ZL2SMC McManaway, Stephen, 52 Massey Crescent, Marewa, Napier
ZL2SN BLACK, R B, 4201 TAIHAPE ROAD, RD 9, HASTINGS
ZL2SP JOHNSON, T A D,
ZL2SQ MCQUILLAN, H, RD 1, TASMAN, UPPER MOUTERE
ZL2SR CARRAN, S R, 263 GRAHAMS RD, BRYNDWR, CHRISTCHURCH
ZL2SS WALLACE, G J, 10B PARKVALE ROAD, OTUMOETEI, TAURANGA
ZL2ST WHITE, S J, 54A AUCKLAND RD, GREENMEADOWS, NAPIER
ZL2STR ROBINSON, S T, 16 COSTER ST, WAKATU, NELSON
ZL2SU HARRIS, Julian, 24 Gandalf Crescent, PARAPARAUMU
ZL2SV ROBERTS, S A, 84 BELL ST, FEATHERSTON 5952
ZL2SW WEDDERSPOON, W,
ZL2SWR SOUTHERN WAIRARAPA BRANCH NZART, C/O ST JOHNS, PO BOX 56, FEATHERSTON 5952
ZL2SWT TENNENT, S W, 94 BLANKEY STREET, HORNBY, CHRISTCHURCH 8005
ZL2SWZ SWARTZ, S,
ZL2SX ANDREWS, D V, 66 KHANDALLAH RD, WELLINGTON 6004

ZL2SY HARRIS, S B, 88A VICTORIA STREET, CARTERTON 5951
ZL2TA MCNEARNIE, K B, 8 DUNK PLACE, PALMERSTON NORTH

ZL2TAB HINTON-COOPER, K E,
ZL2TAE SAYWELL, I C, WESTERN LAKE, R D 3, FEATHERSTON
ZL2TAF COOKSON, F J, 2 MOONRIDGE ROAD, RD 1, PORIRUA
ZL2TAG BENNETT, A J, 9 JASPER AVE, MT ROSKILL, AUCKLAND 4

ZL2TAJ SQUIRES, D R, 22B HOSPITAL ROAD, KAWAKAWA, NORTHLAND 0291
ZL2TAK INGHAM, C G, 138 DOWSE DRIVE, LOWER HUTT
ZL2TAL GYDE, R V, 148A PIONEER RD, NEW PLYMOUTH
ZL2TAM LAM, J C S, 16 MILLS ST, ELTHAM
ZL2TAP BAKER, W R E, 6 NATHAN ST, LINDEN, TAWA
ZL2TAQ HADFIELD, C I, 18 PEPPERTREE GLADE, PALMERSTON NORTH
ZL2TAR INGHAM, J D, 138 DOWSE DRIVE, MAUNGARAKI, LOWER HUTT 6009
ZL2TAS MARSH, J K, MAIN RD, OAKURA
ZL2TAU WILSON, S J, 12 ATUA STREET, JOHNSONVILLE, WELLINGTON
ZL2TAW RUSS, D, 153 CRACROFT ST, WAITARA
ZL2TB LINNEY, E, 14 QUIGLEY ST, NEWLANDS
ZL2TBD DONCLIFF, B, 2 HASLAM CRESCENT, HILLMORTON, CHRISTCHURCH 8002
ZL2TBE SIMPSON, K W, 3 MILTON STREET, MURCHISON
ZL2TBG SNELSON, K H, 26 THE ANCHORAGE, WHITBY
ZL2TBH HENDERSON, G J, 60 CEDAR STREET, MAUNGARAKI, LOWER HUTT
ZL2TBI SIMPSON, N M, 3 MILTON STREET, MURCHISON
ZL2TBK LOVE, G A, PO BOX 6826, WELLINGTON
ZL2TBL DELUGAR, K M, 211 MATAI ROAD, RAUMATI BEACH 6010

ZL2TBM MILES, B, 25 FOX ST, FEATHERSTON
ZL2TBN NELSON, B E, 14 CRANBROOK ROAD, WAIKANAE 6010
ZL2TBP NORGROVE, A E, 90 SOUTH KARORI RD, WELLINGTON
ZL2TBS WARD, L A, 11 PINNY AVE, LOWER HUTT
ZL2TBU STEVENS, J E R, 48 CHESTERTON ST, WELLINGTON
ZL2TBZ MILSOM, M A, 1D BRORA CRES, PAPAKOWHAI 6006
ZL2TC WINTON, L J, 47 RICHMOND ST, NAPIER
ZL2TCC BROWN, G R, 28 MANGAROA HILL ROAD, MAORIBANK, UPPER HUTT
ZL2TCD PHILLIPS, A R J, 7 MACEY CRESCENT, BLENHEIM
ZL2TCG STIPKOVITS, S P, 76 VIEW ROAD, HOUGHTON BAY, WELLINGTON 6002
ZL2TCH HERD, C G, 17 HAUNUI ROAD, PUKERUA BAY 6010
ZL2TCL LACEY, J D, PO BOX 30-828, LOWER HUTT
ZL2TCN BARNHILL, J D, PO BOX 27-239, WELLINGTON
ZL2TCO CLODE, D B, 96 BATTYS ROAD, BLENHEIM
ZL2TCR DRAFFIN, C R, MT FLORIDA STN, PRIVATE BAG 7517, GISBORNE
ZL2TCU MILNE, R J,
ZL2TCW BONNOR, C R, 13 TURERE PLACE, WANGANUI 5001
ZL2TD PRESTON, P J, 201 CECIL ROAD, WADESTOWN, WELLINGTON
ZL2TDA DAWSON, D J, 4 COHEN PLACE, PALMERSTON NORTH
ZL2TDC DE GREY, S J,
ZL2TDD CLARKE, T R, 192 HELSTON RD, PAPARANGI, WELLINGTON
ZL2TDF DICKER, J L, STAPLEGROVE, WAIMEA WEST RD 1, BRIGHTWATER
ZL2TDH HINDRY, D J, RD 199 VALLEY ROAD, PARAPARAUMU
ZL2TDI DONEY, P A, 51C PATERSON ST, WANGANUI 5002
ZL2TDJ BOYD, D J, FLAT 1/48 CAMPBELL ST, WANGANUI
ZL2TDK DONALD, A J, 16 GOLF ROAD, PARAPARAUMU BEACH, WELLINGTON
ZL2TDM MORGAN, D P, 1252 FERGUSSON DRIVE, MAORIBANK, UPPER HUTT 6007
ZL2TDN THERKLESON, G L, 106 Tirohanga Road, Tirohanga, Lower Hutt

ZL2TDO HYDE, P R, 26 RANDWICK CRES, MOERA, LOWER HUTT

ZL2TDP Charles, Colin, 87 Pasadena Crescent, Totara Park, Upper Hutt
ZL2TDR GILGRIST, H T, 183 TE MOANA ROAD, WAIKANAE 6010
ZL2TDS BOYD, C B, 110 LINTON ST, PALMERSTON NORTH
ZL2TDV GROVER, D, PO BOX 3262, WELLINGTON 6015
ZL2TE IRESON, S, 57B SUNNYVALE ST, NEW PLYMOUTH
ZL2TEC ADAMS, B W, 1 D'ARCY ST, RICHMOND, NELSON
ZL2TED COLGAN, E L, 55 HYDE ST, WAINUIOMATA, WELLINGTON

ZL2TEE ROBBINS, S, 10 ECLIPSE LANE, WHITBY, PORIRUA
ZL2TEL LOEFFELLECHNER, E, 6 CUNLIFFE ST, WELLINGTON 6004
ZL2TEM MCQUEEN, S E, 34 KERKWALL DRIVE, NAE NAE, LOWER HUTT
ZL2TER ROBERTS, M A, 40 PORUTU STREET, FAIRFIELD, LOWER HUTT
ZL2TEW WOOLMAN, E R, 34B ELBOURNE STREET, TARDALE, NAPIER
ZL2TF FLEMING, T A, 1 MATAI PLACE, PAHIATUA
ZL2TFB COX, R J C, 8 BEN NEVIS PLACE, GRANDVIEW ESTATE, HAMILTON
ZL2TFC CARRUTHERS, B M, AG TRONICS LTD, PRIVATE BAG, NEW PLYMOUTH
ZL2TFI PICKETT, B M, 60 WINTERS ROAD, PAPANUI, CHRISTCHURCH 5
ZL2TFO BROWN, E J, 12A CHURCHILL ST, WHAKATANE
ZL2TFR RAMSAY, C G F, 62 KAIKOURA ST, MAUPUIA, WELLINGTON
ZL2TFS SEARS, M E, 9 SADLIERS STREET, STOKE, NELSON
ZL2TFT STOHR, F A, 36A PRETORIA ST, LOWER HUTT
ZL2TFX FOX, G J, 18 ROBERT ST, NEWLANDS, WELLINGTON
ZL2TFY CANDY, D O, RAUMA RD, R D 3, TAIHAPE
ZL2TFZ SAYER, J B, 235 UPPER PLAIN RD, MASTERTON
ZL2TG DE BURGH, R J, 39 SEDDON STREET, FEILDING
ZL2TGC COOKE, G J, 14 SYLVAN AVENUE, WAIKANAE 6010
ZL2TGD DEMPSEY, G D, 423 COLLINGE RD, HASTINGS
ZL2TGF MOORE, T E, 50 FLEET ST, NAENAE, LOWER HUTT
ZL2TGI STEENSON, A D, 126 NAPIER ROAD, HAVELOCK NORTH
ZL2TGK JONES, G W, 10 JOHN GUTHRIE PLACE, NEW PLYMOUTH
ZL2TGM MEADS, G T, 12 TOTARA TCE, INGLEWOOD
ZL2TGN BERRY, R M, PO BOX 8581, HAVELOCK NORTH
ZL2TGQ GREENBANK, R J, 31 SOMES CRES, WELLINGTON
ZL2TGW CLIFFORD, K S, 69 HAGGERTY STREET, RD54, KIMBOLTON
ZL2TGX MORRISON, J F, 27 MULGRAVE ST, ASHHURST
ZL2TH DARBY, P R, 25 SOUTH RD, NEW PLYMOUTH
ZL2THD RIGGS, P T, 3 LATHAM ROAD, YORK BAY, EASTBOURNE
ZL2THE SMOLNICKI, M, 19 OAKLEIGH STREET, MAUNGARAKI, LOWER HUTT 6009
ZL2THM HOPKINS, M D, 6 TEDDER WAY, KARORI, WELLINGTON
ZL2THO HOWE, J F, 51 OXFORD RD, WANGANUI
ZL2THP DEWSNAP, A V, 30 RURU CRES, UPPER HUTT
ZL2THU CROPP, I, 7 BLUE MOUNTAINS RD, SILVERSTREAM, UPPER HUTT 6007
ZL2THV NEILL, W J, 9 MALDA GROVE, KHANDALLAH, WELLINGTON
ZL2THW MUIR, A W, 61 DOWNING STREET, CHARTWELL, WELLINGTON 4
ZL2THX BLANCHARD, D C, 469A EGMONT RD, RD2, NEW PLYMOUTH
ZL2THZ HUBER, R F, PO BOX 3361, WELLINGTON
ZL2TIE GUILFORD, A E, 41 TUAKAU ROAD, PUKEKOHE, AUCKLAND
ZL2TIG DOUGLAS, A W J, 20 STANHOPE GROVE, KOROKORO, LOWER HUTT
ZL2TIL MAXWELL, D M, 7 PLUNKET AVENUE, PETONE, WELLINGTON 6008
ZL2TIO BARNES, P E, 790 UPPER DURHAM ROAD, RD 8, INGLEWOOD
ZL2TIQ BRIESEMAN, P J, 12 FRANKLYN RD, TAWA
ZL2TIS STEWART, I, 99 UPPER PLAIN ROAD, MASTERTON
ZL2TIT TAYLOR, A F, 16 WASHINGTON TERRACE, NELSON
ZL2TJ JOHNSON, T A D,
ZL2TJB TOWLER, J I, 1 OLIVIA CRESCENT, TAWA, WELLINGTON
ZL2TJC WAKELY, B, FLAT 1/3 THE RIDGEWAY, NELSON
ZL2TJG GOULD, J A, 24 REDVERS DRIVE, BELMONT, LOWER HUTT
ZL2TJJ HANNON, G J, 109 MAIN RD, CLIVE 4152
ZL2TJM BAKER, R E, 7 BATT STREET, PALMERSTON NORTH
ZL2TJO BRICE, D, PO BOX 317, FEILDING
ZL2TJP BRYANT, P, 62 CLARENCE ST, WELLINGTON
ZL2TJR REISIMA, A J, 3 CRAIG GROVE, UPPER HUTT 6007
ZL2TJT SCHMIDT, J T, 9 PONDEROSA GROVE, UPPER HUTT
ZL2TJV VENEBERG, J, PO BOX 40-075, UPPER HUTT 6415
ZL2TJX EVANS, E T, 16 DAVIDSON AVE, NAPIER
ZL2TK GARING, T R, 2 HOLLIES CRESCENT, JOHNSONVILLE, WELLINGTON
ZL2TKA RICKARDS, C M, 21A LONGVIEW DRIVE, NEW PLYMOUTH

ZL2TKB KNIGHT, K J, 12 LORD AUCKLAND ROAD, WAKEFIELD, NELSON
ZL2TKC GEORGE, I A, MAIN RD, R D 2, TE KARAKA, GISBORNE
ZL2TKH HODGES, K J, 110 TOTARA DRIVE, HAMILTON
ZL2TKI SANSON, I M, PO BOX 109, WAITANGI, CHATHAM ISLANDS
ZL2TKL THORNTON, W H, P O BOX 8139, HAVELOCK NORTH 4230
ZL2TKM MCROBERTS, K, 49 ARROW STREET, NELSON
ZL2TKV BURNS, F N R, 1010 WAIPUNA ST, HASTINGS
ZL2TKY PATTLE, K A, 10 WOODSTOCK TCE, TAWA 6006
ZL2TLD MCALLISTER, G B, 83 UPPER PLAIN RD, MASTERTON
ZL2TLE RAMSAY, K J, 62 KAIKOURA ST, MAUPUIA, WELLINGTON 6003
ZL2TLF SARGENT, D J, 9 NGAHERE ST, INGLEWOOD
ZL2TLJ JONES, B L, 64 PUHINUI RD, PAPATOETOE, AUCKLAND 1701
ZL2TLL WALLACE, D P, 149 ORANGI KAUPAPA RD, WELLINGTON 6005
ZL2TLO O'DONNELL, L M, 27 AWANUI ST, NEW PLYMOUTH
ZL2TLV VERNON, L A F, 1 WHIO STREET, TAIHAPE
ZL2TM EDWARDS, R F, 4 LEWIS ST, GISBORNE
ZL2TMB BEER, M C E, 45A MILL STREET, MARTON
ZL2TME JONES, S E, PO Box 562, NELSON
ZL2TMI LILL, V E, PO BOX 56-090, TAWA
ZL2TMR NORLING, R W, 94 MIRO ST, OHAKUNE
ZL2TMS PALLESEN, P A, 808 NORTH RIVERSLEA RD, HASTINGS
ZL2TMU MCGHIE, R C, 67 MURRAY AVE, HAWERA
ZL2TMW WRIGHT, T M, 124 REALM DRIVE, GLEN HAVEN, PARAPARAUMU
ZL2TMX SMITH, C F, 6 RIMU PLACE, TARADALE, NAPIER
ZL2TMY HANNAN, P E, TIRONUI, R D 1, MARTINBOROUGH
ZL2TMZ WOODFIELD, N C, 1487 WHANGAMATA RD, RD 1, TAUPO

ZL2TN BRIGHTING, T L, 18 ASHFORD AVE, PALMERSTON NORTH
ZL2TNE HAIGH, TANIA, 197 PARK ROAD, PALMERSTON NORTH
ZL2TNG GIBBONS, N M, 35 MATAI ROAD, RAUMATI SOUTH
ZL2TNI SUTTON, T D, 17 TORY STREET, NELSON
ZL2TNL LAING, N G, 1 FEARON STREET, SEDDON
ZL2TNM STOKES, D C, FLAT 2/185 CECIL RD, WADESTOWN, WELLINGTON
ZL2TNU DEVON, D R, 81 GRETA ST, OAMARU
ZL2TNW EARL, T H, 148 KELBURN PARADE, WELLINGTON
ZL2TO NZART WAITARA BRANCH INC, C/O L SMART, 48 LESLIE STREET, WAITARA
ZL2TOA RYDER, M A, 219 THORP STREET, MOTUEKA
ZL2TOD ROBINSON, M G, 55 LUPIN ROAD, OTAKI 6471
ZL2TOF VINCENT, P C, 7 PHARAZYN ST, FEILDING
ZL2TOH FULTON, J E R, 22A TRELISSICK CRES, NGAIO, WELLINGTON
ZL2TOO DALEY, B J,
ZL2TOP COLEY, N, 84 MAIN ROAD, WAINUIOMATA 6008
ZL2TOQ DAVSON, B E, 113 Revan St, FEATHERSTON
ZL2TOR WOODS, D J, RD 5, NGAIO RD, FEILDING
ZL2TOS ANDERSON, K J, 215 STOKES VALLEY RD, STOKES VALLEY
ZL2TOU BRUNTON, R G, 19 GLADSTONE ST, WOODVILLE
ZL2TOZ O'DONNELL, M J, PO BOX 272-1009, PAPAKURA
ZL2TPB BARNETT, P, OLD COACH ROAD, MAHANA, R D 1, UPPER MOUTERE
ZL2TPC WEBB, P, 3 SOMERVILLE LANE, BRIGHTWATER, NELSON

ZL2TPH HELLBERG, P E, 96 KELVIN GROVE RD, KELVIN GROVE, PALMERSTON NORTH 5301
ZL2TPL LAING, P D, 6 MCDONALD ST, TAITA, LOWER HUTT
ZL2TPO JACKSON, C D, PO BOX 180, OTAKI
ZL2TPP CALDWELL, J D, 36 RANGIORA TERRACE, TAHUNANUI, NELSON
ZL2TPQ BROWNING, K F, 56 COLE ST, DANNEVIRKE
ZL2TPS STRINGER, P, P O BOX 3085, RICHMOND, NELSON
ZL2TQ MACDONALD, A, 39 ANISEED GROVE, TIMBERLEA, UPPER HUTT
ZL2TQA NIXON, P J, 574A FERGUSSON DRIVE, UPPER HUTT, WELLINGTON
ZL2TQD FULTON, H R, 13 STAYSAIL PLACE, WHITBY
ZL2TQK MAXWELL, C H, 8 MARTIN GROVE, LOWER HUTT
ZL2TQP QUIN, C J, 29 DOMINION PARK RD, WELLINGTON
ZL2TQQ HILL, H R, 3A BALLIOL DRIVE, TAWA
ZL2TQZ ROWE, I, 427 TEKOUMA BAY ROAD, TE KOUMA RD1, COROMANDEL
ZL2TR HEADIFEN, T G, 15 TASMAN STREET, LEVIN
ZL2TRB HODGKINSON, V M, 19 THIRLMERE STREET, WAINUIOMATA, WELLINGTON 6008
ZL2TRD Smith, Peter Ross, 40 Summer St, Ponsonby, Auckland
ZL2TRE JENNINGS, S B, 66 PINE AVE, UPPER HUTT
ZL2TRF STRICKLAND, M J,
ZL2TRG OMER, P, 90 CAMERON RD, RD 1, GISBORNE
ZL2TRL JARVIS, M D, 11 STONEHAVEN CRES, PALMERSTON NORTH
ZL2TRM MACKENZIE, H R, 23 BALGOWNIE AVE, WANGANUI
ZL2TRN WILSON, W L, PO BOX 2409, HASTINGS

ZL2TRQ

ZL2TRQ MCKENZIE, N A, 1 COLENSO AVE, NAPIER
ZL2TRT THORBURN, C R, 35 TIRANGI ROAD, KILBIRNIE, WELLINGTON
ZL2TRV YALDWYN, J S C,
ZL2TRW WATSON, R H, 44 ORR CRES, LOWER HUTT 6009
ZL2TRX COUTTS, C G, 12 PAIERAU ROAD, R.D.1, MASTERTON 5901
ZL2TRZ TONKIN, J R, 15 AHURIRI ST, WELLINGTON
ZL2TS OFSOSKI, J F, 8 WAYSIDE, MIRAMAR, WELLINGTON 6003
ZL2TSD KEEN, N K M, PO BOX 484, WHAKATANE
ZL2TSE THOMPSON, A B J, 15 FULTON AVENUE, FENDALTON, CHRISTCHURCH
ZL2TSI ALLISON, D N, PO B0X 1066, QUEENSTOWN
ZL2TSK MILLARD, G, 710 MAIN ROAD NORTH, TE MARUA, UPPER HUTT
ZL2TSL LAYBOURN, B J, 69 BELL STREET, FEATHERSTON
ZL2TSM BROWN-DOUGLAS, F A, PO BOX 10-133, WELLINGTON
ZL2TSO OSBORNE, S J, P O BOX 141, WAIPAWA 4176
ZL2TSP SALT, B R, 514A FENWICK ST, HASTINGS
ZL2TSQ MATHESON, A R, 21 FALKLAND STREET, WANGANUI
ZL2TSY LANG, K J, 97 RATANUI ROAD, PARAPARAUMU, WELLINGTON 6010
ZL2TT GILBERT, WIN, 146 LIVERTON ROAD, BELMONT, LOWER HUTT
ZL2TTA MCNEIL, I J, 111 NORANA RD, UPPER HUTT
ZL2TTB LYSKINE, G, 19 KOROMIKO RD, WAIKANAE
ZL2TTC ADAMSON, F R, 22 NAUGHTON TCE, KILBIRNIE, WELLINGTON
ZL2TTE CRAMPTON, J F, 40 ROGER STREET, BLENHEIM
ZL2TTF CHRISTIANSON, N J, 51 IMLAY CRES, NGAIO, WELLINGTON 6004
ZL2TTK GRIDLEY, D C, 2 THOMPSON PLACE, TIRIMOANA, R D, PICTON
ZL2TTL WATKINS, K R, 19A CARTHEW ST, OKATO
ZL2TTM DEKKER, J C, 10 CLAREMONT RISE, LEVIN
ZL2TTS JANSEN, C T F, 31 BEDFORD STREET, NORTHLAND, WELLINGTON
ZL2TTX WALKER, R S, 9 MILNE TCE, WELLINGTON
ZL2TTY BOYCE, M L P, 26 SUTHERLAND CRESCENT, PALMERSTON NORTH
ZL2TU ADIN, B E, 18 DUKE ST, LEVIN
ZL2TUA WEBB, D A, PO BOX 86, MURCHISON
ZL2TUD FUTTER, R J, PO BOX 38-662, PETONE 6340
ZL2TUF HASTIE, L M, RD 11, KOPUTARA RD, FOXTON
ZL2TUI BERGEN, E A, 4 ARMAGH TCE, MARTON
ZL2TUR BANKS, M, 66 CUMBERLAND ST, NEW PLYMOUTH
ZL2TUT MCPHERSON, D B, 60 WAIKAWA ROAD, PICTON
ZL2TV SANSON, R G, 55 BERTRAM ST, WARKWORTH
ZL2TVA BURNEY, G L, 125 KNIGHTS RD, LOWER HUTT
ZL2TVB SEED, B V, 27 CLAY RD, RD 12, LEVIN
ZL2TVG BUCK, G K, 96 CLEGHORN STREET, BLENHEIM
ZL2TVL BROOK, M A, 10 MOUNT HOLDSWORTH ROAD, RD1, CARTERTON 5951
ZL2TVM CROSS, G E, 52 CUDBY STRET, LOWER HUTT
ZL2TVO SCOTT, P A L, 28 JEFFERSON PLACE, TAURANGA
ZL2TVP EDEN, A D, 8 Fell Place, STOKE, NELSON
ZL2TVT JENKINS, A R, 13 SELWYN STREET, VOGELTOWN, NEW PLYMOUTH
ZL2TVU MCGAHEY, R, 27 ROBERTS AVENUE, ARAMOHO, WANGANUI
ZL2TVV NEWLAND, P B, 25A TAWA TCE, TAWA
ZL2TVX COOKE, R J, 78 WAIHEMO STREET, PORIRUA
ZL2TVY SMITH, R L, 1 BURWAH ST, BERHAMPORE, WELLINGTON 6002
ZL2TW WATCHMAN, S J, 33 Brooklyn Drive, BLENHEIM
ZL2TWB FELL, L J, P O BOX 9427, CHRISTCHURCH
ZL2TWD FEIST, D M, 2 ARNOT AVENUE, UPPER HUTT
ZL2TWK SIDDALL, R M, 20 MATT LANE, RD 1, HOWICK, AUCKLAND
ZL2TWL LACKNER, W, C/- MR A JACK, FIRE NO 17, HOMEBUSH ROAD, MASTERTON
ZL2TWM WILSON, C I, 11 ASHTON TCE, CASTLECLIFF, WANGANUI
ZL2TWN FOUBISTER, M W, 2 SERGEANTS WAY, CLARKS BEACH, AUCKLAND 1850
ZL2TWO JENNINGS, J P H, 18 ST JOHNS TERRACE, REDWOOD, TAWA
ZL2TWQ FRYER, R J, TIRONUI, R D 1, MARTINBOROUGH
ZL2TWS WYSOCKI, J M, 115A EPUNI ST, LOWER HUTT
ZL2TWW WILHELMUS, NIGEL, 136 MAUNGATAPU ROAD, RD 2 RAI VALLEY, BLENHEIM
ZL2TWZ MURPHY, P C, 274 SONGER STREET, STOKE, NELSON
ZL2TX Hardy, Nigel, Po Box 15078, Otaki Railway
ZL2TXJ HOARE, M F, P O BOX 20-321, CHRISTCHURCH
ZL2TXK DUNCAN, G R, 3 King Street, Taradale, NAPIER
ZL2TXL EASTERGAARD, A G, P O BOX 176, CARTERTON
ZL2TXP PRENTICE, A J, 21 JAMES ST, WAIKAWA BEACH, R D 31, LEVIN
ZL2TXV BALDWIN, A N, 8 HOBSON PLACE, PALMERSTON NORTH
ZL2TXX PENNEY, B J, 52 NORWICH STREET, STOKE, NELSON
ZL2TY CONROY, T J, FLAT 2, 138 WADDINGTON DRIVE, NAENAE
ZL2TYB LOCKYER, R H, 11 TREVELYAN ST, NAPIER
ZL2TYI JOHNSON, J W, 106 NEWLANDS ROAD, NEWLANDS, WELLINGTON 6004
ZL2TYO FITZSIMONS, B J, 121 ONSLOW ROAD, KHANDALLAH, WELLINGTON
ZL2TYR ROBERTSON, D R, 19 LANYON PLACE, WHITBY, WELLINGTON 6009
ZL2TYU ABERNETHY, R J, 40A PETERHOUSE ST, TAWA, WELLINGTON
ZL2TZ BOULD, J R, 14D BURNESS RD, GREENMEADOWS, NAPIER
ZL2TZE CONZA, P J, 4 MCFARLANE PLACE, BLENHEIM
ZL2TZG SARGENT, G R, 14 HUTCHINS ST, WAITARA
ZL2TZH HELSON, N G, MCLAUGHLINS RD, DARFIELD, RD1, CHRISTCHURCH
ZL2TZV SUTTON, P R,
ZL2TZW MILES, I D, 25 FOX ST, FEATHERSTON
ZL2TZX HOSKINS, R H, 26 SIGNAL ST, FOXTON BEACH 5551
ZL2UA READ, E P, 36 GEORGE STREET, ORMISTON, QUEENSLAND 4613
ZL2UAA BISSETT, W L, 6/16 BLEDISLOE STREET, RUAWAI 586
ZL2UAG GILBERT, A C, 126 MT HERBERT RD, WAIPUKURAU 4176
ZL2UAJ NEWELL, M C, 18 PRATT AVE, FOXTON BEACH
ZL2UAN WILLS, A R, 30 CITY VIEW GROVE, LOWER HUTT
ZL2UAO MURPHY, G R, 274 SONGER STREET, STOKE, NELSON
ZL2UAS SOUTHWART, A, 5 TOWNLEY STREET, ELGIN, GISBORNE
ZL2UB TERRIS, R D, 45 MARLOWE STREET, STOKE, NELSON
ZL2UBA MAITLAND, I J, PO BOX 743, WANGANUI
ZL2UBG LOWES, C W, 27 ST HILL LANE, HAVELOCK NORTH
ZL2UBH COLE, L R, 8 LONDON RD, PETONE
ZL2UBK WEBBER, D, 4 VICTORY CRES, TAWA
ZL2UBM TAYLOR, G J W, RD 3, HAMMERICKS ROAD, BLENHEIM
ZL2UBN BRIGGS, A G, 580 LOWE ST, HASTINGS
ZL2UBO GRENFELL, S K, 14 MAMARI ST, KILBIRNIE, WELLINGTON 3
ZL2UBP RIORDAN, I M, R D 1, TAKAKA
ZL2UBU HOWIE, I M C, 9 TRELISSICK CRES, WELLINGTON
ZL2UBW MILLER, J R C, 58A THACKERAY STREET, UPPER HUTT
ZL2UBZ GAUDIN, G W, 18 TRAFALGAR ST, NEW PLYMOUTH
ZL2UC HOOPER, A E, PO BOX 31-091, MILFORD, AUCKLAND 1309
ZL2UCA GILCHRIST, R J, 61 HETA RD, NEW PLYMOUTH
ZL2UCD CALVERT, D A, FABIANS RD, RD 1, GREYTOWN
ZL2UCE HURSTHOUSE, D E, 24 DUART RD, HAVELOCK NORTH
ZL2UCG BIRCHALL, O J, PO BOX 4505, PALMERSTON NORTH
ZL2UCI RAWDON, P D, 2/38 FORTH STREET, RICHMOND, CHRISTCHURCH 8001
ZL2UCJ BIRT, K J, 16 CHATSWOOD GROVE, NEW PLYMOUTH
ZL2UCN GOLDSWORTHY, D A, 165 PEMBROKE RD, NEW PLYMOUTH
ZL2UCS MCPHERSON, M E, 60 WAIKAWA ROAD, PICTON
ZL2UCT OBORN, D E, 68 PEMBROKE RD, NORTHLAND, WELLINGTON
ZL2UCW BRAY, D K, 35 WAVELL CRES, MASTERTON
ZL2UCX DAVIS, S I, PO BOX 120, CHRISTCHURCH
ZL2UDA BARNES, B R, 175B CAMBRIDGE RD, TAURANGA
ZL2UDC LOCKIE, D C, 70 CASHMERE AVE, WELLINGTON 4
ZL2UDE SENIOR, R J, 34 LAHORE ST, WAIROA
ZL2UDF WHEELER, M B, PO BOX 39 079, WELLINGTON MAIL CENTRE
ZL2UDO NIELD, P J, 115 HOLLY STREET, AVONDALE, AUCKLAND 1007
ZL2UDS STUART, D J, P O BOX 38-589, WELLINGTON MAIL CENTRE
ZL2UDT ROONEY, S A, 48 RIMU ST, WAIKANAE
ZL2UDV BAKER, J, PO BOX 882, MASTERTON 5915
ZL2UEF WHITTAKER, J W, 154B Rata St, Naenae, LOWER HUTT
ZL2UEI MCCONNEL, W K, 15 HINTON AVE, HAMILTON
ZL2UEL EVANS, R, 30 MARGARET ROAD, RAUMATI BEACH 6010
ZL2UEW AURISCH, P J, PO BOX 58, TAUPO
ZL2UFE VICKERS, M P, ELTHAM RD, R D 21, STRATFORD
ZL2UFH HUNTINGTON, R J, 17 PRIME RD, GREY LYNN, AUCKLAND 1002
ZL2UFI GOODING, M S, 204 PLATEAU RD, TE MARUA, UPPER HUTT
ZL2UFN BLYDE, GRAEME, 18 EGMONT STREET, KAPONGA
ZL2UFP CORDY, M, 32 DAVID CRES, KARORI, WELLINGTON
ZL2UFR GIBSON, B S, 56 RAUKAWA DRIVE, MAYFIELD, TAURANGA
ZL2UFS KENT, ALAN, 7 HOUSE AVE, MANGERE BRIDGE, AUCKLAND
ZL2UFW BALDWIN, T N, 158 RALEIGH ST, WAITARA
ZL2UGC CLARK, B A, P O BOX 189, CARTERTON
ZL2UGF NICOLSON, A J, PO BOX 9280, WELLINGTON
ZL2UGG SYME, D R, 17 ROGERS RD, BAY VIEW, NAPIER
ZL2UGH NEWPORT, C W, 162 KAWAI STREET, NELSON
ZL2UGL SOUTHAM, J E, 17A PIMLICO PLACE, NEWLANDS, WELLINGTON 4

ZL2UGN GREGORY, B, 6 COBHAM ST, LEVIN
ZL2UGR SMITH, P R, 66 KENTWOOD DRIVE, WOODRIDGE, WELLINGTON 6004
ZL2UGS JONES, B R, 4800 STATE HIGHWAY 3, RD 3, OHAUPO
ZL2UGV SENIOR, J I M, 34 LAHORE ST, WAIROA
ZL2UHH MCGOWAN, D W, 18A BELL STREET, WANGANUI
ZL2UHP Turner, Robert Hemi, 19 Bangor Avenue, Flaxmere, Hastings

ZL2UI BAILEY, I L, 5 RYEGRASS DELL, WELCOME BAY, TAURANGA
ZL2UIA LIPSKI, K,
ZL2UIB MORRISH, I D, 11 PIGEONWOOD LANE, WOODRIDGE ESTATES, NEWLANDS, WELLINGTON
ZL2UIH BRIGGS, G J, 580 LOWE ST, HASTINGS
ZL2UIJ WATTS, MALCOLM,
ZL2UIN GREGORY, A, 6 COBHAM ST, LEVIN
ZL2UIO MANNERING, W L, 8 GLASTONBURY DRIVE, BURWOOD, CHRISTCHURCH
ZL2UIV CANDY, S T R, PO BOX 56-072, WELLINGTON 6230
ZL2UJ SADGROVE, P C, 37 KING ST, CAMBRIDGE
ZL2UJI SADGROVE, 111 AVIEMORE DRIVE, HIGHLAND PARK, AUCKLAND
ZL2UJK KYLE, J P, PO BOX 26-525, EPSOM, AUCKLAND
ZL2UJL RIDEN, C P, 92 ATAWHAI RD, PALMERSTON NORTH
ZL2UJN SINCLAIR, N J, 8 KAPU GROVE, NEW PLYMOUTH
ZL2UJS SINCLAIR, J J, 8 KAPU GROVE, NEW PLYMOUTH
ZL2UJT JURY, N J, 288 HENWOOD ROAD, R D 2, NEW PLYMOUTH

ZL2UJW WARRINER, J R K, 3 CHRISTOPHER WAY, PAPARANGI
ZL2UK WAKEFIELD, C M, 5 GILLESPIE STREET, TAITA, LOWER HUTT
ZL2UKF KING, M A, 577 FERGUSON STREET, PALMERSTON NORTH
ZL2UKO WILSON, C J, REDWOOD VALLEY LANE, RD 1, RICHMOND
ZL2UKS PRENTICE, N C,
ZL2UKT HUGHES, C M, 11-A EVEREST AVENUE, LOWER HUTT
ZL2UKW PRIOR, M S,
ZL2UKX HALE, R E, 122 Westchester Drive, Churton Park, Wellington
ZL2UKY VOWELL, D J, 22B JASMINE PLACE, MT MAUNGANUI, TAURANGA 3002
ZL2UKZ CLAPCOTT, P J, 8J/18-36 WAKEFIELD ST, AUCKLAND 1001
ZL2UL LYFORD, A W, 10C RUI STREET, TAHUNANUI, NELSON
ZL2ULB MARTIN, G, 5 ATHERSTONE LANE, BELMONT, LOWER HUTT
ZL2ULC NEWSON, I S, 23 SIGNALLERS GROVE, SEATOUN, WELLINGTON
ZL2ULD LENNOX, B T, 52 SIENA PLACE, OHOKA, R D 2 KAIAPOI
ZL2ULI O'NEILL, A H, VILLA 42, SUMMERSET VILLAGE, 249 TE MATA RD, HAVELOCK NORTH
ZL2ULK ETCHELLS, D J, C/- UPPER HUTT C ITY COUNCIL, PRIVATE BAG 907, UPPER HUTT
ZL2ULM SIMPSON, L M, 3 MILTON STREET, MURCHISON
ZL2ULN BRUCKEL, P,
ZL2ULO BRUCKEL, 372 Annesbrook Drive, Tahunanui, Nelson
ZL2ULT TAYLOR, G R, 105 WAIKAWA ROAD, PICTON
ZL2ULV ALLAN, P D, 20A COURTNEY STREET, MOTUEKA
ZL2ULY MEFFAN, P M, 595 ROCKS ROAD, NELSON
ZL2UMB SHAND, B R, C/O RYDER CHESHIRE TRUST, 112A TE AWE AWE ST, PALMERSTON NORTH
ZL2UMS STACEY, M D, 27 CHAPMAN CRES, NAENAE, LOWER HUTT
ZL2UNH HOLLAND, N L, 5 PARKLANE MEWS, 326 THE TERRACE, WELLINGTON 6001
ZL2UNK PLUM, D B, 178 THE RIDGEWAY, STOKE, NELSON
ZL2UNR RICHARDSON, N, 129, HIGH STREET, MASTERTON
ZL2UNS PARKER, M A, 64 PAHIATUA ST, PALMERSTON NORTH
ZL2UNX BONIFACE, N J, 163 COLOMBO RD, MASTERTON
ZL2UO TEREZOW, T, 25 MAGNOLIA GROVE, MAUNGARAKI, LOWER HUTT
ZL2UOL LEVICK, A H, 17 MASCOT ST, TAWA
ZL2UPB BROOKS, P M, 33 HOTHAM STREET, MURCHISON
ZL2UPF FRANCIS, S P, 57 HETA RD, NEW PLYMOUTH
ZL2UPH HERD, P T, 17 HAUNUI ROAD, PUKERUA BAY 6010
ZL2UQ WILLIAMS, R C, VILLA 28, SUMMERSET VILLAGE, 102 LIVERPOOL ST, LEVIN
ZL2UQU HERNANDEZ, M, 10A DUNCAN ST, TAWA, WELLINGTON
ZL2UR LOCKIE, H A, 70 CASHMERE AVE, WELLINGTON
ZL2URE EVANS, R G, 211 MATAI ROAD, RAUMATI BEACH 6010
ZL2URJ JOLLY, I C, WILLOW PARK RD, RD11, MASTERTON
ZL2URN CHRISTENSEN, J H, 86 QUEENS ROAD, WAIKANAE BEACH
ZL2US BENIS, H G, VILLA NO. 64, SUMMERSET VILLAGE, 65 GUILFORD DRIVE, PARAPARAUMU 6010
ZL2USA JONES, J, 4 DORSET STREET, LEVIN
ZL2USB HUNTER, G M, 148 TOREA STREET, GRANITY, BULLER
ZL2USG LARDELLI, S M, RURAL BAG 7525, GISBORNE
ZL2USM FOX, A C K, 37 ST JOHN TCE, TAWA
ZL2USS HOLDEN, G D, 34 MIDDLETON RD, JOHNSONVILLE, WELLINGTON

ZL2UST COTTLE, A, 166 OLD HAUTERE ROAD, RD, OTAKI
ZL2USV WHITE, P S, PO BOX 6013, GLENVIEW, HAMILTON
ZL2UT DAVOREN, B J, PO BOX 275, GISBORNE
ZL2UTG HILL, A N, 79 FRANKTON RD, QUEENSTOWN
ZL2UTR FRANCIS, G A, 31 CLEMOW RD, NEW PLYMOUTH
ZL2UTX DINES, J, P.o. Box 1241, Portland, Victoria
ZL2UU TOLLEY, H G R, 28A ESSEX STREET, MASTERTON 5901
ZL2UW NAULLS, R D, 119 ARTHUR CRES, TAUPO 2730
ZL2UWY LAYBOURN, R A, 146 PEMBROKE RD, NORTHLAND, WELLINGTON 5
ZL2UX MACDONALD, J R, 39 ANISEED GROVE, UPPER HUTT
ZL2UXP BRICKELL, G R, 18 TE PARI PARI RD, PUKERUA BAY 6450

ZL2UZP MARTENS, P H, 26 MULBERRY STREET, LOWER HUTT
ZL2UZQ ALLEN, A J, 8 SHAFTESBURY GROVE, STOKES VALLEY
ZL2VAF NEWSON, J R, 19 LORNE CRESCENT, FLAXMERE, HASTINGS
ZL2VAL LEECH, A W, 1/50 QUEENS RD, NEW PLYMOUTH
ZL2VAR ANDERSON, G A, 2 MILFORD DOWNS, MASTERTON
ZL2VAU HELLBERG, D J, 96 KELVIN GROVE RD, KELVIN GROVE, PALMERSTON NORTH 5301
ZL2VAX FLEMING, P A, 711 BALLANCE VALLEY ROAD, R.D. 3, PAHIATUA
ZL2VB VAN BEEK, G G A M, 16 NORWICH PLACE, PALMERSTON NORTH
ZL2VBC ROSEWARNE, C, 53 LEE STREET, CASTELCLIFF, WANGANUI 5001
ZL2VBI ALLAN, G, 20A COURTNEY STREET, MOTUEKA
ZL2VBO GOODGER, G W, 5 DODSON ROAD, TAKAKA
ZL2VBR BENTON, B, 13 SEAVIEW ROAD, MOTUROA, NEW PLYMOUTH
ZL2VC JOHNSON, C, 2/3 TARBET PLACE, FLAXMERE, HASTINGS

ZL2VCC WHEATLEY, C A, 150 WYNDHAM STREET, ASHHURST
ZL2VCM MORRIS, C E, 196A UPPER PLAIN ROAD, MASTERTON
ZL2VCR Day, Denis Lawrence, 16 Kimberley Grove, PALMERSTON NORTH
ZL2VEW WOOD, A R, P O BOX 1236, WELLINGTON
ZL2VFR PERCIVAL, P C, PRIVATE BOX 2565, WELLINGTON
ZL2VG PRICE, D A, P O BOX 19237, WELLINGTON
ZL2VGB MCANULTY, G B, 35 DANIELL ST, MASTERTON
ZL2VH UPPER HUTT BRANCH NZART INC, C/- 35 MATAI ROAD, RAUMATI SOUTH 6010
ZL2VHF CLARK, D I, 8 SEVERN TCE, PALMERSTON NORTH
ZL2VI MANNING, E E, 33 TIVERTON GROVE, NEW PLYMOUTH
ZL2VJ JONES, V L, 10 JOHN GUTHRIE PLACE, NEW PLYMOUTH

ZL2VJR RHODES, J M, 54 KEMPTON ST, GREYTOWN
ZL2VJS SEFTON, J,
ZL2VJW WALLACE, J J, 91 AUSTIN ST, ONEKAWA, NAPIER
ZL2VK FORD, P J, 19 REDWOOD AVE, TAWA, WELLINGTON
ZL2VKE POMANA, S M, THE FLAT @ 2 MURPHY ROAD, TARADALE, NAPIER
ZL2VL GLOAG, G F, 16A KIMBOLTON RD, FEILDING
ZL2VM BULL, M B, 51 LIVERPOOL CRES, NAPIER
ZL2VMB MCNABB, B V, 2 KARO PLACE, MOTUEKA
ZL2VMH HOULT, M R, 4 BANCROFT TCE, NEWLANDS, WELLINGTON
ZL2VMJ JOHNS, M F, P O BOX 953, NEW PLYMOUTH
ZL2VN GAUDIN, W G, 18 TRAFALGAR ST, NEW PLYMOUTH
ZL2VO HAYMAN, G, 73 MAKORA RD, MASTERTON
ZL2VP CHESHIRE, A H, 5 SEDDON ST, UPPER HUTT
ZL2VQ GAUDIN, G C, 18 TRAFALGAR ST, NEW PLYMOUTH
ZL2VRC CLOUGH, R M, 6 WHITECHAPEL GROVE, STOKES VALLEY
ZL2VRK KOMARKOWSKI, R A, P O BOX 30004, LOWER HUTT, WELLINGTON
ZL2VRX GRAY, R A J, 7 NATHAN PLACE, PALMERSTON NORTH
ZL2VSM MCANULTY, S M, 35 DANIELL ST, MASTERTON
ZL2VSP PRAKASH, S, 71 ROTHERHAM TCE, MIRAMAR, WELLINGTON
ZL2VSS MCFADYEN, S J, 39 KAHU STREET, ROTORUA
ZL2VTH HAYWARD, P R, 35 TIRANGI ROAD, KILBIRNIE, WELLINGTON
ZL2VV CARTER, L J,
ZL2VVM MONK, V B, KAPUA FARM, RD 1, FEATHERSTON
ZL2VX MCLEOD, P J, 3 SWANSEA STREET, PALMERSTON NORTH
ZL2WA WELLINGTON VHF GROUP INC, PO BOX 12-259, WELLINGTON
ZL2WAK CLARK, B J, 9 SAVAGE CRESCENT, PALMERSTON NORTH

ZL2WAL WALLACE, R G, 28 HEREFORD STREET, WILTON, WELLINGTON 6005
ZL2WAS KIRK, G A, 33 BARNES ROAD, REDWOOD, CHRISTCHURCH
ZL2WAT THRESHER, A E, POHANGINA VALLEY EAST RD, R D 14, ASHHURST
ZL2WAU COOPER, S R, 24 YORK ST, HILLCREST, DANNEVIRKE
ZL2WAV JAMES, A N, 24 HAMPDEN STREET, MURCHISON 7191
ZL2WAX CAMPBELL, W M, C/O P PEMBERTHY, R D 5 RANGITIKEI LINE, PALMERSTON NORTH

ZL3 CALL-SIGNS

ZL3AA HARPUR, K, 4 WESTBY STREET, OPAWA, CHRISTCHURCH
ZL3AAB GARLICK, Z H, 18 HARBOUR ROAD, MOTUEKA
ZL3AAC ATKINSON, H R, 98 CONDELL AVE, CHRISTCHURCH
ZL3AAD ALDERSON, G, RD 1, 7 PRIORS RD, RANGIORA
ZL3AAG BATTERBURY, C, 46 GLENMORE AVE, CASEBROOK, CHRISTCHURCH 8005
ZL3AAN COLVILLE, L M, 115 CAMERON ST, ASHBURTON
ZL3AAO BALLANTYNE, S T, 48 REMPSTONE DRIVE, HALSWELL, CHRISTCHURCH
ZL3AAS SILKE, A J, PO BOX 5462, LAMBTON QUAY, WELLINGTON
ZL3AAT VAN WAELSDEN, F H A, 138 ROLLESTON ST, RAKAIA 8355
ZL3AAU MILLER, J G, WHITEWOOD CRES, R D 5, CHRISTCHURCH 8021
ZL3AAY BOWIE, A F S, 4 WESTBURN TCE, ILAM, CHRISTCHURCH
ZL3AAZ ALLAN, L L, 74 GOOD ST, RANGIORA 8254
ZL3AB SULLIVAN, M T D, 64 BROADHAVEN AVE, PARKLANDS, CHRISTCHURCH 8009
ZL3ABA ALLAN, S L, 74 GOOD ST, RANGIORA 8254
ZL3ABB MCKAY, D J, 55 WINGATE ST, CHRISTCHURCH
ZL3ABC HOOKER, R O, 272 WAINONI RD, CHRISTCHURCH
ZL3ABH MIDDLEMISS, I R, UNIT 30/472 LINWOOD AVENUE, CHRISTCHURCH 8006
ZL3ABJ JENSEN, B D, 21 COLWYN ST, CHRISTCHURCH
ZL3ABN LAWRY, D W, P O BOX 37197, HALSWELL, CHRISTCHURCH
ZL3ABO LAWRY, PO BOX 2054, QUEENSTOWN
ZL3ABP SNUSHALL, J G, PO BOX 108, KAIKOURA
ZL3ABR HARRIS, G T, 283 CANNON HILL CRES, ST ANDREWS HILL, CHRISTCHURCH
ZL3ABU STRACHAN, I S, 41 NEW BRIGHTON ROAD, SHIRLEY, CHRISTCHURCH 8006
ZL3ABW MAUNDER, H B, 29 AWATEA ROAD, WIGRAM, CHRISTCHURCH
ZL3ABY O'SULLIVAN, K D, 53 MARLBOROUGH ST, GREYMOUTH
ZL3AC NZART CHRISTCHURCH BRANCH 05 INC, PO BOX 1733, CHRISTCHURCH
ZL3ACA NUTH, G L, 47 MARLOW RD, CHRISTCHURCH
ZL3ACC CHAMBERS, C H, 21 DE VILLE PLACE, CHRISTCHURCH
ZL3ACD BATCHELOR, G W, 41 KIRKWOOD AVE, CHRISTCHURCH
ZL3ACE DODGSHUN, J C, 10 DEVONPORT LANE, CHRISTCHURCH
ZL3ACF RICHARDSON, J T, 3 MONOWAI CRES, CHRISTCHURCH
ZL3ACH WHITE, D J, 1 PITMAN PLACE, WAIMATE
ZL3ACL BIDLAKE, R P, 24 JAMES ST, TIMARU
ZL3ACM ZAMPESE, M J, 105 ELLICOTT RD, HAMILTON
ZL3ACN HONEY, R M, 167 BRITTEN ST, HOKITIKA
ZL3ACP SENIOR, G J, HOLME STATION, R D 2, TIMARU
ZL3ACS BORGFELDT, C D, 37 BLANKNEY ST, CHRISTCHURCH
ZL3ACU MCKAY, B, 23 PALMSIDE ST, CHRISTCHURCH
ZL3AD DAVIDSON, A H, 804 OXFORD RD, RD 1, RANGIORA
ZL3ADB CRASE, G E, 59 WAKEFIELD ST, WESTPORT
ZL3ADC LINTOTT, N, 49 JOCELYN ST, CHRISTCHURCH
ZL3ADF HIRTZEL, J E, 451 GREERS RD, CHRISTCHURCH
ZL3ADG BURNSIDE HIGH SCHOOL RADIO CLUB, GREERS RD, CHRISTCHURCH
ZL3ADH BOOTE, R J, 8 HINTON RD, GREYMOUTH
ZL3ADJ JENNINGS, L W, 5 BIRCHS ROAD, PREBBLETON
ZL3ADL WISE, R A, F/29 HARMON COURTS, 85 POULSEN ST, CHRISTCHURCH 2
ZL3ADO DOLAMORE, C J, 50 OHOKA MEADOWS DRIVE, MANDEVILLE, RD 2 KAIAPOI
ZL3ADP MACDONALD, D C, 221 MIDDLE RD, ASHBURTON
ZL3ADQ HAMILTON, J C, 12 HIGHCREST HEIGHTS, WESTMORLAND, CHRISTCHURCH 8002
ZL3ADS SQUIRE, D D, 15 ALEXANDRA ST, TEMUKA
ZL3ADT JOHNSON, R D, 15 REGENT AVENUE, RANGIORA
ZL3ADV PHILLIPS, R W, 31 APPLEBY CRES, CHRISTCHURCH 8005
ZL3ADZ WIGNALL, T J S, 8 MARQUESS AVENUE, HALSWELL, CHRISTCHURCH 8003
ZL3AE MAY, S J, 156 PAGES RD, TIMARU
ZL3AF ASHBURTON BRANCH NZART, AVIATION MUSEUM ASHBURTON AIRPORT SEAFIELD ROAD, ASHBURTON
ZL3AFB STIRLING, K W, 37 KELVIN CRES, ASHBURTON
ZL3AFC SIMPSON, P R, PO BOX 164, HOKITIKA, CHRISTCHURCH 8005
ZL3AFE ZAMPESE, L, 105 ELLICOTT RD, HAMILTON
ZL3AFH LATHAM, W I, 168 MACKENZIE AVE, CHRISTCHURCH
ZL3AFI DALTON, T P, 41 CHARLES UPHAM AVENUE, HILLMORTON, CHRISTCHURCH
ZL3AFN GRIFFITHS, J P, 54 FERRY ROAD, SPRING CREEK, BLENHEIM
ZL3AFQ DUXBURY, I N, STEPHENS BAY, RD 2, MOTUEKA 7161
ZL3AFS PEARCY, E A, 239 CONDELL AVE, CHRISTCHURCH
ZL3AFV HENDEN, J R, 371 HAREWOOD ROAD, BISHOPDALE, CHRISTCHURCH
ZL3AFW WILSON, W E, SANDY KNOLLS RD, R D 1, CHRISTCHURCH
ZL3AFZ HALL, C L, 20 SUMNER ST, SPREYDON, CHRISTCHURCH
ZL3AG GIBSON, E N, 36 GRAHAMS RD, CHRISTCHURCH 8004
ZL3AGA BOLLAND, N, 12 BRENT PLACE, CHRISTCHURCH
ZL3AGB BARRETT, T, 47 ARNOLD ST, SUMNER, CHRISTCHURCH
ZL3AGF BLANCHARD, J S, 37 REYNOLDS AVE, CHRISTCHURCH 8005
ZL3AGL SINCLAIR, S, 54 WITHELLS RD, CHRISTCHURCH
ZL3AGM JACKSON, B A, INNISFREE, KNIGHTS ROAD 5 RD WEST MELTON, CHRISTCHURCH
ZL3AGP THOMSON, G G, 10 HANRAHAN ST, CHRISTCHURCH
ZL3AGQ HARRIS, D W, 67 AYERS ST, RANGIORA 8254
ZL3AGS LOVELL, J D, 41 YARDLEY ST, CHRISTCHURCH
ZL3AGT FOSTER, I M, 205 OLD RENWICK RD, RD2, BLENHEIM
ZL3AH HERNANDEZ, A A, PO BOX 7, CLYDE 9180
ZL3AHL LYON, K W, 2 LEANDER ST, PAPANUI, CHRISTCHURCH
ZL3AHM DINEEN, R T, 106 HALSWELL JUNCTION RD, CHRISTCHURCH 8003
ZL3AHN WHITLEY, W G, 13 HEYDERS RD, CHRISTCHURCH
ZL3AHO REED, B S, 76 CHILTONS ROAD, R D 2, KAIAPOI
ZL3AHP PAYNE, A T,
ZL3AHQ MCDONALD, A W, 73A CRANFORD ST, CHRISTCHURCH
ZL3AHT HOLLAND, S M, 15 ZEPHYR TCE, GOVERNORS BAY, R D 1 LYTTELTON
ZL3AHU HOLLAND, M C, 15 ZEPHYR TCE, GOVERNORS BAY, R D 1 LYTTELTON
ZL3AHW WILLIAMS, NOEL, 174 Tramway Rd East, RD 3, Wyndham
ZL3AHX WELLS, P H, 27 SAMUEL ST, CHRISTCHURCH
ZL3AHY LOVELL, M E, 41 YARDLEY ST, CHRISTCHURCH
ZL3AI FRASER, D J, PO BOX 12, WAIPARA
ZL3AIB TIMMS, R C, 7 DERENZY PLACE, CHRISTCHURCH 8004
ZL3AIC CHILTON, M T, 183 BELFAST RD, CHRISTCHURCH
ZL3AID HAWKSLEY, K A, 4 WINCHFIELD ST, CHRISTCHURCH 8007
ZL3AIK TAYLOR, D A, 34 MACKENZIE DRIVE, TWIZEL
ZL3AIV ROWLANDS, R J, 6 CENTENNIAL AVENUE, RICCARTON, CHRISTCHURCH
ZL3AIX TILLMAN, E S, 19B MULBERRY PLACE, CHRISTCHURCH 8005
ZL3AJ MCDONALD, K R, 68 INWOODS RD, QUEENSPARK, CHRISTCHURCH 9
ZL3AJA KEELEY, L J, 35 WILLS ST, ASHBURTON
ZL3AJB BRACE, A J, 14 QUEEN ST, WESTPORT
ZL3AJE ROBBINS, D J, 66 ACACIA AVE, CHRISTCHURCH 4
ZL3AJW WILDS, J R, P O BOX 130115, ARMAGH STREET, CHRISTCHURCH
ZL3AK ROWE, D J, 10 MARAMA CRES, CHRISTCHURCH
ZL3AKM GLASSEY, R B, 63 NORTHCOTE ROAD, CHRISTCHURCH 8005
ZL3AL SMYTHE, G C, 20 GLENCULLEN DRIVE, BISHOPDALE, CHRISTCHURCH 8005
ZL3AM PARK, S, 8 BAINTON STREET, BISHOPDALE, CHRISTCHURCH
ZL3AMP PALMER, A M, C/O MARK FEARY, 9 GRANGE PARK AVE, PARAPARAUMU
ZL3AN MCLEAN, J L, P O BOX 886, TIMARU
ZL3AO BELL, M W, 203 WESTON RD, CHRISTCHURCH
ZL3AP WHITFIELD, S J N, 48 HAWTHORNDEN RD, CHRISTCHURCH
ZL3APP PARKYN, P R, 4 WITHAM ST, HORNBY, CHRISTCHURCH 8004
ZL3AQ MATTINGLEY, G T, 89 CREEK RD, ASHBURTON
ZL3AR MAY, A P, PO BOX 261, TIMARU
ZL3ARC CHRISTIE, ALISTAIR, 3 RHYL PLACE, BRYNDWR, CHRISTCHURCH
ZL3ARJ ADAMS, R J, 30 WESLEY ST, KAIAPOI
ZL3AS MURRAY, A G,
ZL3AT THOMAS, A L, 50 ROSE STREET, PARKSIDE, TIMARU
ZL3ATV O'BRIEN, C M, 104 ESTUARY RD, CHRISTCHURCH 7
ZL3AV BLYTH, D, 1 WAINSCOTT ST, GREENMEADOWS, NAPIER
ZL3AW PHILLIPS, M A, NSW, SIDING SPRING OBSERVATORY, COONABARABRAN, NSW 2357
ZL3AX WISE, M, 440 TUAHIWI ROAD, RD1, KAIAPOI
ZL3AZ RAYNER, D A, 29 THOMSON STREET, TINWALD, ASHBURTON 8300
ZL3BA CARSHALTON, M D, 7 CHECKETTS AVENUE, HALSWELL, CHRISTCHURCH
ZL3BAB ACKROYD, B E I, ACKROYD RD, WAITOHI, RD 25, TEMUKA
ZL3BAW WRIGHT, B A, 64 TENNYSON STREET, CHRISTCHURCH 2
ZL3BB GRAY, G W, 31 DENNISTON CRES, REDWOOD, CHRISTCHURCH
ZL3BC CAMPBELL, B M, 37A COMPTON ST, WOOLSTON, CHRISTCHURCH
ZL3BCO HOUGHTON, B, 1/10 SHELBOURNE STREET, NELSON 7001
ZL3BCR ROWE, B C T, P O BOX 12, KIRWEE

ZL3BD DORE, B L, 66A COTTONWOOD ST, PARKLANDS, CHRISTCHURCH
ZL3BE EMMETT, B A, FLAT 2, 144 BEACH RD, NORTH NEW BRIGHTON, CHRISTCHURCH 8009
ZL3BG HIMING, L C, 23 COOPERS RD, CHRISTCHURCH
ZL3BGD Drumm, Brian, 3 Swithland Place, Avonhead, Christchurch
ZL3BI BRICE, K L, 18 COLLEGE AVE, CHRISTCHURCH
ZL3BJ Dougan, William John, 110 Jeff Drain Road, R D 2, Kaiapoi
ZL3BK CHAPMAN, B K, 17 CUBA STREET, CARLTON HILL, DUNEDIN 9001
ZL3BM MEANS, C B, 1318 BLYTHE RD, RD 3, CHEVIOT
ZL3BMW WATERS, B M T, 81B EASTERN TCE, CHRISTCHURCH
ZL3BN BELLINI, B C, 98A QUEENS RD, GLEN AVON, NEW PLYMOUTH
ZL3BOB GORDON, R A, PO BOX 14, LYTTELTON, CHRISTCHURCH 8033
ZL3BP MOUNTFORD, T G, F2/207A OTIPUA RD, TIMARU
ZL3BQ URLWIN, A J, PO BOX 259, WANAKA, DUNEDIN 9192
ZL3BRB BENNETT, B, 19 KINTARE ROAD, R D 1 CIRCLE HILL, MILTON
ZL3BRC REEFTON-BULLER BRANCH NZART, 42 DOMETT ST, WESTPORT
ZL3BS TWEEDIE, S B, 167 WALES ST, CHRISTCHURCH
ZL3BSH RICHARDS, P D, 162 HIGH ST, WAIMATE 8791
ZL3BT WHITE, E I, 95 ABBERLEY CRES, ST ALBANS, CHRISTCHURCH 1
ZL3BV WILKINSON, B V, 102 GRAFTON STREET, PHILLIPSTOWN, CHRISTCHURCH
ZL3BW BURT, G L, PO BOX 215, KATIKATI
ZL3BX PATTRICK, B L, 1 KANUKU PLACE, CASHMERE, CHRISTCHURCH 2
ZL3BY HALFORD, B B, 37 MCHARDIE ST, WALLACEVILLE, UPPER HUTT 6007
ZL3BZ JOHNSON, C, 17 HILLVIEW PLACE, PLEASANT POINT
ZL3CA SANDFORD, T W, 219 JOHNS RD, HAREWOOD, CHRISTCHURCH 8005
ZL3CAN HOWELL, H G M, 12A SALFORD AVE, CHRISTCHURCH 8005
ZL3CAR CANTERBURY AMATEUR RADIO DEVELOPMENT SOCIETY INCORPORATED, PO BOX 218, CENTRAL CITY, CHRISTCHURCH
ZL3CAT KINGSBURY, BRUCE, 23 Oxford Street, Claudlands, Hamilton
ZL3CB FLECKNOE, G A, 6 KYEBURN PLACE, CHRISTCHURCH
ZL3CD MOYLE, J R, 68C CLYDE RD, CHRISTCHURCH
ZL3CDM MACKIE, C D, 67 SULLIVAN AVENUE, OPAWA, CHRISTCHURCH
ZL3CE HEWSON, J N, 69/150 Williams Street, Kaiapoi
ZL3CED DAWSON, C E S, 26 TARANAKI DV, WOODEND 8255
ZL3CG SILVERWOOD, K, WAIMANGAROA, VIA WESTPORT
ZL3CH COOK, H P, UNIT 5 / 16 WANAKA PLACE, MAIREHAU, CHRISTCHURCH
ZL3CJ PARKER, T L, 36 SHEFFIELD CRES, CHRISTCHURCH
ZL3CJH HARRIS, C, FLAT 6,126 ORANGI KAUPAPA RD, NORTHLAND, WELLINGTON
ZL3CJS SHUKER, C J, 163A KITCHENER ROAD, PUKEKOHE
ZL3CK SEAY, M R,
ZL3CL LOVELL-SMITH, C D, 423 CASHMERE ROAD, WESTMORLAND, CHRISTCHURCH
ZL3CLG GOOD, C L, 81 AVENUE ROAD, HIGHFIELD, TIMARU
ZL3CM BURRELL, K M, 5 JACARANDA GROVE, LOWER HUTT
ZL3CN MANTELL, G N, 39 COOK DRIVE, WHITIANGA
ZL3CO WYLIE, P B, 101 ENGLEFIELD RD, CHRISTCHURCH
ZL3COL ROWE, C G, 20 KINGSBURY AVE, RANGIORA
ZL3CP PATERSON, C, 31 WORSNOP WAY, RD4, ALBANY, AUCKLAND
ZL3CR SMITH, W E, 9 WOLSEY PLACE, HILLMORTON, CHRISTCHURCH 8002
ZL3CS DOWNER, G H, 29A GRANGE ST, OPAWA, CHRISTCHURCH 8002
ZL3CSB WONG, K K, 42 WAIMAIRI RD, ILAM, CHRISTCHURCH
ZL3CT BENNETT, R S, 67 ARONUI RD, ALEXANDRA
ZL3CTN SCOTT, M J, 9 RENOIR AVE, BELMONT, LOWER HUTT
ZL3CU MOFFATT, S Z, 17 WAYSIDE AVE, CHRISTCHURCH 8005
ZL3CV BATES, C, 44 MAXWELL STREET, RICARTON, CHRISTCHURCH
ZL3CW CALVO, J, 31 RAURENGA AVE, EPSOM, AUCKLAND
ZL3DA JOHNSON, D A, 56 THORPE STREET, MOTUEKA
ZL3DAC CROKER, K J, MAIN ROAD, BIRCHFIELD, WAIMANGAROA
ZL3DAT CULLEN, L, 46 WILTON CRES, CHRISTCHURCH
ZL3DB BUSCHL, B D, C/O SORENSEN, 62 SHORTLAND ST, Wainoni, CHRISTCHURCH 8006
ZL3DC GRINDROD, R J, 309 LETHBRIDGE ROAD, R D 9, FEILDING
ZL3DD MITCHELL, A R, 55 SHOREHAM ST, BLOCKHOUSE BAY
ZL3DES THOMAS, D J, 90 ALLENS RD, ASHBURTON
ZL3DF ELLIS, M R, P O BOX 24259, EAST LINWOOD, CHRISTCHURCH
ZL3DGW WARD, D G, PO BOX 201-180, AUCKLAND AIRPORT, SOUTH AUCKLAND 1730
ZL3DH HARDIE, W S, 245A HAREWOOD RD, CHRISTCHURCH
ZL3DI TYLEE-PORTER, G J, 62 BROAD ST, SOUTHBRIDGE
ZL3DJ GILL, M E, RIVER RD, GREENPARK RD 2, CHRISTCHURCH
ZL3DJB BISSLAND, DAVID, 12 HIGHGATE AVENUE, FENDALTON, CHRISTCHURCH
ZL3DJW WRIGHT, D J, 3A LOCHMORE STREET, HAREWOOD, CHRISTCHURCH 8005
ZL3DK GODFREY, C Y, RD 2, KAIKOURA
ZL3DL BARKER, L G,
ZL3DM MCGUIRE, D H, 14 SNELL CRES, WAIHI BEACH
ZL3DMH Hart, Douglas, Flat 1, 47 London Street, Richmond, Christchurch
ZL3DO O'MALLEY, D B, 72 CROFTON RD, CHRISTCHURCH
ZL3DON CAMPBELL, D R, 244 FERRY RD, LINWOOD, CHRISTCHURCH
ZL3DP MEIKLE, B,
ZL3DR GODFREY, R J, RD 2, MAIN SOUTH RD, KAIKOURA
ZL3DRM MACER, D R J, 31 COLWYN ST, CHRISTCHURCH
ZL3DS BREWSTER, D W,
ZL3DT SEARLE, G, 8 SCORESBY STREET, OPUA, BAY OF ISLANDS
ZL3DU BETTRIDGE, M J, 2 COOK ST, CARTERS BEACH, WESTPORT
ZL3DV JEFFERIS, E W, 4 CUNNINGHAM ST, LEESTON 8151
ZL3DW BARRON, A D, 124 ST JAMES AVE, CHRISTCHURCH
ZL3DWM Morrison, Donald, 5 Whitby Place, Kaikoura 7300
ZL3DWS SEARLE, D, PO BOX 20-256, BISHOPDALE, CHRISTCHURCH
ZL3DX MCGEE, W H, 116 B HIGHSTED RD, CHRISTCHURCH
ZL3DY FIRMAN, R K, 1/8 HOPKINS STREET, TIMARU
ZL3DYL CROKER, J H, C/O WAIMANGAROA POST, VIA WESTPORT
ZL3DZ THOMSON, G, 103 PALMERS RD, NORTH BEACH, NEW BRIGHTON
ZL3FB THOMSON, 1 NGAIO STREET, MACANDREW BAY, DUNEDIN
ZL3FG O'NEILL, J J, 26 MCBRATNEYS RD, CHRISTCHURCH
ZL3FI OLSEN, F B,
ZL3FJ BROWN, D A, 62 HUDSON ST, CHRISTCHURCH
ZL3FK HEPBURN, L D, 305/21 Fairview Ave, Albany, Auckland
ZL3FM BATEMAN, N E, 44 JOLLIES PASS RD, HANMER SPRINGS
ZL3FN WILSON, R J, 11 HIGH ST, GREYMOUTH
ZL3FO BLACKMORE, J H, 364 RIVERLAW TCE, CHRISTCHURCH
ZL3FP KYLE, E A J, C/O PJ ROGERS, 413 CASHMERE RD, CHRISTCHURCH 3
ZL3FR NIXON, M A, 3 HOLMWOOD ROAD, FENDALTON, CHRISTCHURCH
ZL3FRI YAMADA, K, 5 LYNWOOD TERRACE, BISHOPDALE, NELSON
ZL3FS SMALL, F A A, 49 HEATHCOTE ST, WOOLSTON, CHRISTCHURCH
ZL3FT CLAPHAM, T S, 206 PLATEAU RD, UPPER HUTT
ZL3FU MCPHAIL, T K, 7 OSTEND PLACE, CHRISTCHURCH
ZL3FV HINES, M J, 154 BRITTAN STREET, HOKITIKA
ZL3FW O'BRIEN, J R, 68A WINDERMERE RD, PAPANUI, CHRISTCHURCH
ZL3GA CLARK, G D, 38A SNEYD ST, KAIAPOI
ZL3GB BRYANT, H G H, 46 WARD ST, KAIKOURA
ZL3GBO GAULAND, AIDAN, 278 BROWNS ROAD ROAD, R D, OXFORD
ZL3GC BAKER, D M, 534 NEWNHAM ROAD, WISHART. QLD 4122, BRISBANE, AUSTRALIA
ZL3GD DONOVAN, G J, C/- PO BOX 56404, DOMINION ROAD, AUCKLAND
ZL3GE WELFORD, A R, 12 DEVON ST, TIMARU
ZL3GG BERRY, R D E, UNIVERSITY OF CANTERBURY EEE DEPT, PRIVATE BAG 4800, CHRISTCHURCH
ZL3GH Hammond, Gary, P O Box 36019, Merivale, Christchurch
ZL3GJX CROSS, G J, 167 WARDS ROAD, RD1, RANGIORA
ZL3GK ADAMS-RICHARDSON, C W, 3164 STATE HIGHWAY 6, HAVELOCK
ZL3GL MAY, G D, 156 PAGES RD, TIMARU
ZL3GM PIMM, O W, 50 OHOKA MEADOWS DRIVE, MANDEVILLE, RD 2 KAIAPOI
ZL3GN BENNETT, R B, 19 KINTARE ROAD, CIRCLE HILL, R D 1 MILTON
ZL3GO SCOTT, T R, 65 WINTER STREET, ASHBURTON
ZL3GP MIDDLEMISS, P G, 17 DE BLOGE PLACE, BURWOOD, CHRISTCHURCH
ZL3GR ROWE, N L,
ZL3GS WRIGHT, G M, 25 DUNEDIN ST, CHRISTCHURCH
ZL3GT SOMERVILLE, J H, 6 HORIZON HEIGHTS, REDCLIFFS, CHRISTCHURCH 8008
ZL3GV KERDEMELIDIS, T, 421 WORCESTER ST, CHRISTCHURCH
ZL3GW SEARLE, V, 7 WHITCOMBE TCE, HOKITIKA
ZL3GX CHAPMAN, A S, 7 DELLOW PLACE, CHRISTCHURCH 8024
ZL3GY WESTLAND BRANCH NZART, MR G B HAY, 37 CHAPEL STREET, GREYMOUTH
ZL3GZ SMITH, H E, 38 PERCY STREET, BLENHEIM
ZL3HAM BUCKLAND, A, 3100 TRAM ROAD, BENNETTS, R D OXFORD 8253

ZL3HB DEANS, R H, 1382 TRAMWAY ROAD, DUNSANDEL, RD 2, LEESTON 8151, CANTERBURY
ZL3HC BRITTENDEN, C E R, 329 WAINONI RD, CHRISTCHURCH
ZL3HD CHAMBERS, D H, 5 STILES PLACE, CHRISTCHURCH
ZL3HF MCDONALD, B M, 43 RIMU ST, TIMARU
ZL3HG DAVY, K T, 75 DURHAM ST, RANGIORA 8254
ZL3HGB BOUWKNEGT, H G, 35 ELIZABETH ST, C/- PDC, CAVE 8770
ZL3HH KIMURA, K, 56 ROCKING HORSE ROAD, SOUTHSHORE, CHRISTCHURCH
ZL3HHS KIMURA, C/O CHRISTIAN ECKHOFF, PO BOX 5, RUSSELL
ZL3HI HIDER, D D,
ZL3HN HOLTUM, J W, 461 JOHNS RD, CHRISTCHURCH
ZL3HP HOVING, P, 24 ROYAL PARK DRIVE, CHRISTCHURCH 8009
ZL3HQ CRAIG, T M, 9/12 MARU RD, TAKANINI, AUCKLAND
ZL3HU SANDFORD, B D, 19-A MONS AVE, MT ROSKILL, AUCKLAND 1004
ZL3HW WALLACE, C W, 36 REMPSTON DRIVE, HALSWELL, CHRISTCHURCH 8003
ZL3HY FLEMING, J G, PO BOX 18-714, CHRISTCHURCH
ZL3HZ SOUTHGATE, W A, 7 PAEROA ST, CHRISTCHURCH
ZL3IA TYERMAN, P F, 37A PENRITH AVENUE, SOMERFILED, CHRISTCHURCH
ZL3IB WALKER, J R L, 19 ATHOL TCE, CHRISTCHURCH
ZL3IC MCCULLOCH, E N, 5 POWELLS ROAD, OXFORD
ZL3IDA ANDREWS, I D, PO BOX 31003, ILAM, CHRISTCHURCH
ZL3IE HOPKINSON, L G, WINDSOR HOUSE, PO BOX 27091, CHRISTCHURCH 6
ZL3IEH HYDE, I E, 26 AYLMERS VALLEY RD, AKAROA 8161
ZL3IG ROSS, P J, 4 OAKFIELD ST, CHRISTCHURCH
ZL3IHD DUFF, I H, 54 Early Valley Rd, Lansdowne, RD2, CHRISTCHURCH
ZL3II POTTER, A R, 60 MATHESONS RD, CHRISTCHURCH
ZL3IJ INGLIS, J M, 288 ESTUARY RD, CHRISTCHURCH
ZL3IM SULLIVAN, J T, 34 ROLLESBY ST, CHRISTCHURCH
ZL3IN SAVILLE, P G, 3 RYDAL STREET, CHRISTCHURCH 8002
ZL3IS OKA, N, C/O MR MW BELL, 203 WESTON RD, CHRISTCHURCH 8005
ZL3IU GRAY, N C, 203 SEAFIELD ROAD, SMITHFIELD, ASHBURTON
ZL3IX SMITH, G, 995 LOWER STYX ROAD, BROOKLANDS, CHRISTCHURCH 8009
ZL3JA ANDERSON, J C, 191 WEST BELT, RANGIORA 8254
ZL3JB BURKE, J P, 246 MAIN NORTH RD, CHRISTCHURCH
ZL3JD VAN KUILENBURG, P H, 45 FARRELLY AVE, MT ROSKILL
ZL3JE STEWART, D A, 33 KING ST, PAREORA
ZL3JEH HALLIDAY, J E, 2A WINCHFIELD STREET, ARANUI, CHRISTCHURCH
ZL3JG RAWSTORN, G J, 71 HALSWATER DRIVE, CHURTON PARK, WELLINGTON 6004
ZL3JH O'HARE, J, 45 DENMARK STREET, TEMUKA 8752
ZL3JI FOULDS, L F, 45 JERVOIS ST, CHRISTCHURCH 8007
ZL3JJ CRUMP, M W, 66 HEWITTS RD, WOODEND 8255
ZL3JK KING, J H, 45 ROBERTA DRIVE, CHRISTCHURCH 2
ZL3JL MCFARLANE, A R, 88 CHALMERS AVE, ASHBURTON
ZL3JM BENNETT, P W, 85 LEINSTER AVENUE, RAUMATI SOUTH 6010
ZL3JMC MCCAUGHTRY, J M, 11 Bunting Place, Woodend
ZL3JN MUMMERY, B H, 8 MCINTYRE ST, SHIRLEY, CHRISTCHURCH
ZL3JO JOHNSTONE, G V O, 2/28 NEW BRIGHTON RD, CHRISTCHURCH 6
ZL3JOE HAMPTON, J, 34 TAMAR ST, OAMARU
ZL3JQ POLL, A K, 1A LANDSDOWNE TERRACE, CASHMERE, CHRISTCHURCH
ZL3JR KELLY, S J C, 47 STUART & CHAPMAN DRIVE, KARORO, GREYMOUTH
ZL3JS SMITH, K R, 231 CHURCH ST, TIMARU
ZL3JT MCMAHON, D D, 15 HARLING ST, CHRISTCHURCH
ZL3JU SORENSEN, A G, 62 SHORTLAND STREET, WAINONI, CHRISTCHURCH
ZL3JV MACGEORGE, B A, 9 OPIE ST, WAIMATE
ZL3JVX ATHERTON, M, 116B ST MARTINS ROAD, ST MARTINS, CHRISTCHURCH 8002
ZL3JW JOHNSTON, L L, 2 WAITAKI ST, CHRISTCHURCH 8007
ZL3JY STALKER, J P, RD 4, GREENPARK, CHRISTCHURCH
ZL3JZ DUMBLETON, R S, 5 VILLAGE LANE, HALSWELL, CHRISTCHURCH
ZL3KA MACER, D R J, 31 COLWYN ST, CHRISTCHURCH
ZL3KB BARNSDALE, K P, 50 CARDRONA ST, CHRISTCHURCH
ZL3KC MELSE, J, PO BOX 304, GREYMOUTH
ZL3KD HARDING, A G F, 6 BOWLINE PLACE, WHITBY
ZL3KF FISHER, K G, 7 NEPAL PLACE, CHRISTCHURCH
ZL3KG GIBBINS, K C, 56 OREGON DRIVE, MAORIBANK, UPPER HUTT
ZL3KH HEYWORTH, K C, 327 RIVER RD, CHRISTCHURCH 8001
ZL3KI JACKSON, D W,
ZL3KJ BANFIELD, E J, 15 REMBRANDT DRIVE, ROLLESTON, CHRISTCHURCH 8004
ZL3KJB BAGNALL, K, 9 CARLISLE PLACE, MARCHWIEL, TIMARU
ZL3KL HOWELL, B C, 6 DEEPDALE ST, CHRISTCHURCH
ZL3KM DAUFELDT, J, C/- STUART THOMAS, BANK NEW ZEALAND, P O BOX 1461, CHRISTCHURCH
ZL3KO GARLOUGH, R H, PO BOX 7, CLYDE 9180
ZL3KP MOYLE, C M, 68C CLYDE RD, CHRISTCHURCH
ZL3KQ HELLYAR, G I, 93 MARSHLANDS RD, CHRISTCHURCH 8006
ZL3KR HUGHES, A G,
ZL3KS DOWNER, M H, PO BOX 83, KIRWEE 8170
ZL3KSM MUNFORD, K S, 77 DOVER RD, FLAXMERE, HASTINGS 4201
ZL3KT BROMLEY, K M, 9 ARCHER PLACE, CARTERS BEACH, WESTPORT
ZL3KU WATERS, K A, 22 BURNETT ST, TIMARU
ZL3KV BROWN, H H, 7 WESTBURN TCE, ILAM, CHRISTCHURCH
ZL3KW WILLIS, K M, 5 WISTERIA PLACE, QUEENSPARK, CHRISTCHURCH
ZL3KWH HEYWARD, K W, 46 YELLOWSTONE CRES, CHRISTCHURCH
ZL3KX Sinclair, M, 109 Gardiners Road, Harewood, Christchurch
ZL3LA LUDBROOK, S W, 175A PALMERS RD, CHRISTCHURCH 9
ZL3LE GUARD, B N, CRONADUN, R D 1, REEFTON
ZL3LI NEAL, J V, 118 BUDGE STREET, BLENHEIM
ZL3LIZ BUCKLAND, E M, 3100 TRAM ROAD, BENNETTS, R D OXFORD 8253
ZL3LJ JORDAN, L P W, C/O S & R SMITH, PIGEON FLAT, R D 2, WAITATI
ZL3LJC OSBORNE, R, CAMP DAVID, RD 3, WAIPARA
ZL3LL OSBORNE, P O BOX 32 060, CHRISTCHURCH
ZL3LM MORRISON, L I, 37 ARUN STREET, OAMARU
ZL3LOU MARSH, L, 31 MILL ROAD, WAIMATE
ZL3LP BROWN, H P, 8 NEILL ST, CHRISTCHURCH
ZL3LQ PALTRIDGE, K K, 131 WARRINGTON ST, CHRISTCHURCH
ZL3LR LEE, P B, 62 WINGATE ST, REDWOOD, CHRISTCHURCH 8005
ZL3LS MILLER, G C, 42 GIBBS DRIVE, WOODEND, CHRISTCHURCH 8255
ZL3LSP HAMBURG, A C, 39B NORMAN SENN AVENUE, KAITAIA
ZL3LX KIRKPATRICK, I J, 26 Birkdale Drive, Fairway Drive, CHRISTCHURCH 8008
ZL3LZ DALE, A J E, 7 BRADSHAW TCE, RICCARTON, CHRISTCHURCH
ZL3MA KINGSWELL, G N, 333 KING ST, TEMUKA
ZL3MAC Crosby, Mark, Drynie, R D 3, Amberley
ZL3MAG GAULAND, MICHAEL, 278 BROWNS ROCK ROAD, OXFORD, CHRISTCHURCH
ZL3MAT WILSON, M D, P O BOX 10315, CHRISTCHURCH
ZL3MB BENNETT, J O, RD 3, ASHBURTON
ZL3MD DACOMBE, M, 20 ALLIN DRIVE, WAIKUKU BEACH, NORTH CANTERBURY
ZL3ME BRAMLEY, C J, 7 EDWARD ST, PREBBLETON, CHRISTCHURCH
ZL3MEM MCNAB, M E, 11 BOURNE CRESCENT, BRYNDWR, CHRISTCHURCH
ZL3MF FOUBISTER, M A, P O BOX 33 095, BARRINGTON, CHRISTCHURCH 8005
ZL3MG URLWIN, R A, PO BOX 259, WANAKA 9192
ZL3MH HELY, M O, RD 2, CHRISTCHURCH
ZL3MJ LEWIS, C T, 30 TE RAMA PLACE, CHRISTCHURCH
ZL3MJS STUBBERFIELD, J M, 138 RUTLAND ST, CHRISTCHURCH
ZL3MK MAY, F K, 30 NIKAU PLACE, TIMARU
ZL3ML MCNICOL, A D, 26 GAINFORD ST, CHRISTCHURCH
ZL3MLS LAWSON-SEARLE, M O, 114 HOSPITAL RD, BLENHEIM
ZL3MM HILLS, R I, 25 RAPAKI RD, CHRISTCHURCH
ZL3MO COLE, W R, 9 FLAX COURT, PENARTH, VALE OF GLAMORGAN, WALES CF64 2RJ
ZL3MQ MCMASTER, R J, 8A HARRIS STREET, WAIMATE
ZL3MS BRASH, J P, 5B INDIRA LANE, CASHMERE, CHRISTCHURCH
ZL3MSF ALLAN, J J, 156 NORTH PARADE, BURWOOD, CHRISTCHURCH
ZL3MT THOMPSON, M C, 18 GREENHILL MAIN ROAD, SHEFFIELD S87RD, ENGLAND
ZL3MU GIBBS, H, 33 BUCHANAN ST, TIMARU
ZL3MW WELFORD, M R, 40 TEMPLE CRES, GLEN-ITI, TIMARU
ZL3MX BURNET, A M R, 10 LEDA PLACE, NEW BRIGHTON, CHRISTCHURCH
ZL3MY SEARLE, R W, 7 WHITCOMBE TCE, HOKITIKA
ZL3NA ROBINSON, D G, RD, KOWHITERANGI, HOKITIKA
ZL3NAI BATEY, S J, 408 BARRINGTON ST, CHRISTCHURCH 2
ZL3NB CARNEY, W J, 174 BEACH RD, CHRISTCHURCH 8009
ZL3NC CAMPBELL, N D, 37A COMPTON ST, WOOLSTON, CHRISTCHURCH
ZL3ND NELSON, J A, GLENAAN STATION, METHVEN
ZL3NE GYDE, R M, 74 HILWELL DRIVE, HENDERSON, AUCKLAND 1008
ZL3NG MCVICAR, J J, 6 PEACOCK ST, CHRISTCHURCH 8001
ZL3NH ROGERS, P J, CNR CASHMERE & HAPPY HOMES RD, CHRISTCHURCH
ZL3NJ KERR, N J,
ZL3NK WALKER, P G, 1/27 CLIVEDON PLACE, REDWOOD, CHRISTCHURCH
ZL3NL TAIT, A M, 8 ASHBOURNE ST, CHRISTCHURCH

ZL3NO JOHANNIS, K L, UNIT 1 BAINSWOOD, 191 KING STREET, RANGIORA 8254
ZL3NQ DREVER, G R, 36C BURNETT ST, ASHBURTON
ZL3NR BURNEY, N J, 97 COX STTREET, GERALDINE
ZL3NRA HUNT, R A, CANTARA, 185 LAMBIES RD, R D 3 AMBERLEY
ZL3NS OSITIS, T, 128 BROOKSIDE TCE, CHRISTCHURCH
ZL3NT BLACKWELL, G C, F 5/82 LINCOLN RD, SPREYDON, CHRISTCHURCH 8002
ZL3NW MACKINTOSH, R M, 144 MAIN NORTH RD, RD1, KAIAPOI
ZL3NX EDGAR, M M, 34 RYDAL ST, HOON HAY, CHRISTCHURCH
ZL3NZ DACOMBE, G N, 20 ALLIN DRIVE, WAKUKU BEACH 8254
ZL3OA MACDONALD, B A, 24 Makepiece Place, BIRKENHEAD, AUCKLAND
ZL3OC SMITH, K J, 334 WAIITI RD, TIMARU
ZL3OD BARNES, G J,
ZL3OE RICHARDS, D L, 38 FRANKLEIGH ST, CHRISTCHURCH
ZL3OF MILNE, I F, 266A HOON HAY ROAD, CHRISTCHURCH
ZL3OJ DIGBY, N, 4 NORFOLK ST, CHRISTCHURCH
ZL3OK DORWARD, I, HOUSE 7 BARROW RD FARM, ASHLEY RD 2, RANGIORA
ZL3OU BELLAMORE, A H, 87 RADLEY ST, CHRISTCHURCH
ZL3OV GILLMAN, B J E, 6 BOYD STREET, RANGIORA
ZL3OX MITCHELL, C J, 320 MT PLEASANT RD, CHRISTCHURCH
ZL3OY DUXBURY, J, GENESIS DRIVE, WEST MELTON, R D 1, CHRISTCHURCH
ZL3OZ OSBORNE, K W, 51 BARNES ST, GLENWOOD, TIMARU
ZL3PAH HOLLIDAY, P A, 275 RIVER ROAD, RICHMOND, CHRISTCHURCH
ZL3PC HAINES, P C, 10 ST JOHNS AVENUE, TIMARU
ZL3PD PLUCK, R L, UNIT 3, CAMROSE VILLAGE, METHVEN
ZL3PE BLYTH, B W, 2 DE COURCY PLACE, AVONDALE, CHRISTCHURCH
ZL3PH ROWE, B, 250 GRAHAMS RD, CHRISTCHURCH
ZL3PI BARTRUM, B R, 31B BOWENVALE AVE, CHRISTCHURCH 8022
ZL3PK ALLAN, J L, 74 GOOD ST, RANGIORA 8254
ZL3PM MCGEE, P, 1 CRAIGIEBURN ST, DARFIELD
ZL3PN BOORER, G F, 48A NEWTON ST, TIMARU
ZL3PO TURNER, D K, PO BOX 99, WARD
ZL3PP CRICHTON, R J C, 11C ROGERS STREET, BLENHEIM
ZL3PR PETERSEN, C M, 51 DERBY ST, WESTPORT
ZL3PRJ JACKSON, PETER, 5 LYALL TCE, TEMUKA
ZL3PS STREETER, P J, 14 MALTBY AVE, TIMARU
ZL3PT CURRY, D R, C/- STUART THOMAS, BANK NEW ZEALAND, P O BOX 1461, CHRISTCHURCH
ZL3PTB BOWER, P T, 15 HARPER ST, TIMARU
ZL3PTP COLLINS, P T P, 489 AVONHEAD RD, CHRISTCHURCH 8004
ZL3PW FOSTER, P J, FLAT 1 694 AVONSIDE DRIVE, AVONSIDE, CHRISTCHURCH 8006
ZL3PX CHAPMAN, G A, 8 BOYS PLACE, CHRISTCHURCH
ZL3PZ JACKSON, W B, 42 CHURCHILL ST, KAIKOURA
ZL3QA PRENTICE, A E, SUNNINGDALE, HAMILTON RSA VETERANS HOME, FLAT 8, 174 PEACHGROVE ROAD
ZL3QC MULLIS, N A, 104 MOORAY AVE, CHRISTCHURCH 5
ZL3QD CLARK, E R, 19 FARNSWOOD PLACE, REDWOOD, CHRISTCHURCH
ZL3QH STANTON, K A, P.O. Box 31-095, Ilam, CHRISTCHURCH
ZL3QI WORNALL, C J, 5 MENLO TCE, CHRISTCHURCH
ZL3QJ HAVORD, P R, MOERAKI RD2, PALMERSTON 9061
ZL3QK DAWSON, R, 41 GARLANDS RD, CHRISTCHURCH
ZL3QL CARRELL, T D, 33 RYELAND AVE, CHRISTCHURCH
ZL3QO ALLAN, J M, EGANS ROAD, 1 RD, RANGIORA
ZL3QQ SEED, T J, 4 WESTMONT ST, ILAM, CHRISTCHURCH
ZL3QR GILLMAN, G H, 6 BOYD STREET, RANGIORA
ZL3QT DELIS, J B G, 455A JOHNS RD, CHRISTCHURCH
ZL3QX MAYO, G J L, 1048 RAPAURA ROAD, RD 3, BLENHEIM
ZL3QY BELCHER, E W, 7 JAMIESON ROAD, STH BEACH, GREYMOUTH 7801
ZL3QZ DANIELS, F J H, NGAKAWAU, VIA WESTPORT
ZL3RA RIACH, C D, 51 OWLES TCE, CHRISTCHURCH
ZL3RAY YOUNG, R A, 2466 SOUTH 450 EAST, BOUNTIFUL, UTAH 84010
ZL3RB SERRA, K C, AYLESBURY ROAD, RD 1, CHRISTCHURCH
ZL3RC SIGNAL, C B, 8 BRIDGE ST, TEMUKA
ZL3RCK KAUTZ, R C, 5 HAMEL LANE, KAIAPOI
ZL3RD DAVEY, D R, 7 WESTVIEW CRES, WEST MELTON RD 6, CHRISTCHURCH
ZL3RDH HENEY, R D, 22A OTIPUA RD, KENSINGTON, TIMARU
ZL3RE BOTT, R A, 9 HOLMCROFT COURT, CHRISTCHURCH 8002
ZL3REW WILLIAMS, R E, 61 ELIZABETH STREET, ASHBURTON
ZL3REX HANDCOCK, R A, 24 FAIRFAX STREET, MURCHISON
ZL3RF DICKEY, C N, 31 SAILS STREET, PAPANUI, CHRISTCHURCH
ZL3RG ROBERTS, G R, P O BOX 9127, ADDINGTON, CHRISTCHURCH
ZL3RHP Prosser, Richard, 121 Dunbars Rd, Halswell, Christchurch
ZL3RI BOYES, J B, 6 DENLEY GARDENS, AVONHEAD, CHRISTCHURCH
ZL3RJ HUTTON, B G, 23 MANHIRE ST, CHRISTCHURCH
ZL3RJK KITCHEN, R J, 41 SHALAMAR DRIVE, CASHMERE, CHRISTCHURCH
ZL3RK KIRK, R M, 35 TINTERN AVE, CHRISTCHURCH 4
ZL3RL TUNNICLIFFE, D N, PO BOX 56-402, AUCKLAND 1003
ZL3RLE Ewing, Ross, 8 Haddon Lane, Harewood, Christchurch
ZL3RM MCKAY, R W, C/- MR M TAYLOR, 805 RIDDELL RD, ST HELIERS AUCKLAND 1005
ZL3RN YEATES, D R, 69 ST ANDREWS HILL RD, CHRISTCHURCH
ZL3RNL RANGIORA NEW LIFE SCHOOL AMATEUR RADIO CLUB, DENCHS RD, SOUTHBROOK, RANGIORA
ZL3RO CARPENTER, R W, 95 CHAPEL ROAD, NORTH LOBURN R D 2, RANGIORA
ZL3ROB GILKS, R, 992 NEWMANS ROAD, WEST MELTON RD 5, CHRISTCHURCH
ZL3ROC ROCKEFELLER, A, 33 MIDHURST STREET, BISHOPDALE, CHRISTCHURCH
ZL3RON MCCAW, R C, 6 FARNDALE PLACE, CHRISTCHURCH
ZL3RP TURNER, M C, 12 CAMP BAY ROAD, PURAU 8030
ZL3RPS RADIO PRESERVATION SOCIETY OF NZ (FERRYMEAD) INC, 269 BRIDLE PATH RD, CHRISTCHURCH
ZL3RQ RIORDAN, G B, 5A GARDINERS ROAD, CHRISTCHURCH
ZL3RQV LAWRENCE, G S, C/- 2 ELM LANE, GORE
ZL3RR NORTH CANTERBURY AMATEUR RADIO CLUB, C/O SECRETARY, P O BOX 14, WOODEND
ZL3RS CAMPBELL, D, 165 A FOREMANS RD, HORNBY, CHRISTCHURCH
ZL3RT TAYLOR, J, 59 MACKENZIE AVE, ROIMATA, CHRISTCHURCH
ZL3RU BENNETT, R G T, 60 KIRKWOOD AVE, CHRISTCHURCH
ZL3RW STEFFENSEN, K A, 10A SEFTON ST, BELFAST
ZL3RX THIRKETTLE, R J, PO BOX 6396, UPPER RICCARTON, CHRISTCHURCH
ZL3RZ KING, S P, 2/88 ESPLANADE, CHRISTCHURCH
ZL3RZY VEINT, R, 197 Park Road, PALMERSTON NORTH
ZL3SA GIBBS, R A, 97 LEAVER TCE, NORTH BRIGHTON, CHRISTCHURCH 9
ZL3SB BROMLEY, S J, 9 ARCHER PLACE, WESTPORT
ZL3SC SHEARMAN, G D, 68 PROCTOR ST, CHRISTCHURCH
ZL3SE PRINTZ, W,
ZL3SG HARBECK, A D, MCHUGHS RD, 2 RD, KAIAPOI
ZL3SH HARDIE, S R, 245A HAREWOOD RD, CHRISTCHURCH
ZL3SJ FRASER, G J, 206 MAJOR HORNBROOK RD, CHRISTCHURCH
ZL3SK PATTRICK, T L, 116 BIRDWOOD AVENUE, CHRISTCHURCH
ZL3SL PORTA, S, 27 RALEIGH STREET, BISHOPDALE, CHRISTCHURCH
ZL3SM GRAHAM, B N, 230 ESPLANADE, KAIKOURA
ZL3SMO MAY, B D, 156 PAGES RD, TIMARU
ZL3SN OLDHAM, J E, 40 RUSSELL ST, WESTPORT
ZL3SO KILKOLLY, J W, 37 HASELDON ST, WESTPORT
ZL3SP BROOKMAN, P J, 361 GARDINERS RD, CHRISTCHURCH
ZL3SR AVERY, F E, 66 MILL ST, WESTPORT
ZL3SS SMALES, K A, 155 MONKS SPUR ROAD, REDCLIFFS, CHRISTCHURCH
ZL3ST GEORGE, A, 224 STANMORE ROAD, RICHMOND, CHRISTCHURCH
ZL3SU ORCHARD, P J, 4 WILSON DRIVE, OHOKA R D 2, KAIAPOI
ZL3SV WATSON, G L, PO BOX 262, MOTUEKA
ZL3SZ DALRYMPLE, D L, 65 FRANKLEIGH ST, CHRISTCHURCH
ZL3TA RITCHIE, M V H, FLAT 1, 313 ESTUARY RD, CHRISTCHURCH
ZL3TAA FLETCHER, J N, 1186 Huia Rd., Huia, Waitakere
ZL3TAC COLLINS, B A, 21 Woodside Common, Westmorland, CHRISTCHURCH 8004
ZL3TAF TAEGE, B S, 16 Worthy Street, Avonhead, Christchurch
ZL3TAG COOK, A J, PO BOX 5, WOODEND
ZL3TAH STEVENSON, M A, 44 PATTERSON TCE, HALSWELL, CHRISTCHURCH
ZL3TAI GRANDIEK, J N, 21 TUIRAU PLACE, ILAM, CHRISTCHURCH
ZL3TAO MACPHERSON, I W, 10 RHYL PLACE, BRYNDWR, CHRISTCHURCH 8005
ZL3TAP Prior, Colin, 128 Sisters Road, Parnassus, North Canterbury
ZL3TAR VISSER, H K, 105 AVONDALE ROAD, AVONDALE, CHRISTCHURCH
ZL3TAT BAKER, E J A, 2 TOTARA ST, PLEASANT POINT 8772
ZL3TAY ROSS, M J, 32 ZEPHYR TERRACE, R D 1, GOVERNORS BAY LYTTELTON
ZL3TB SOMERVILLE, J D, PO BOX 2936, CHRISTCHURCH
ZL3TBB BENISON, B D, RAVEN DRIVE, RD 4, CHRISTCHURCH
ZL3TBC GRENFELL, A D, 77 THRELKELDS ROAD, R D 2, KAIAPOI
ZL3TBD SYMONDS, A C, 19 STYLES PLACE, CHRISTCHURCH 8006
ZL3TBE PRITCHARD, D V, 16A WHITE STREET, TIMARU
ZL3TBG O'NEILL, T J, 89 PAGES RD, CHRISTCHURCH
ZL3TC COBB, P B, 2 WEYMOUTH GROVE, ARAKURA, WAINUIOMATA 6008
ZL3TCB BROADHURST, C C, 649 GLOUCESTER STREET, LINWOOD, CHRISTCHURCH

ZL3TCD

ZL3TCD DALTON, T P, 41 CHARLES UPHAM AVENUE, HILLMORTON, CHRISTCHURCH
ZL3TCG DEANS-SYDDALL, J M, C/- 32 GRAFTON STREET, PHILLIPSTOWN, CHRISTCHURCH 8001
ZL3TCK SANDS, A J, C/- P O BOX 21188, EDGEWARE, CHRISTCHURCH
ZL3TCL LIGHTBOWN, C P, 34 BELLA ROSA DRIVE, HEI HEI, CHRISTCHURCH
ZL3TCM RAMSEY, R B, 31 ROLLESBY ST, CHRISTCHURCH
ZL3TCV GARRAWAY, W A, 120 WARREN CRES, CHRISTCHURCH
ZL3TCW STANDEVEN, E R, 24 BRYNLEY ST, HORNBY, CHRISTCHURCH
ZL3TD DEAN, T, 5 NATHAN AVENUE, PARAPARAUMU BEACH, PARAPARAUMU
ZL3TDD MARKS, J W J, 20 DOBSON ST, CHRISTCHURCH
ZL3TDF SMITH, B A, CHARODALE, OLD WEST COAST ROAD RD1, CHRISTCHURCH
ZL3TDR ROBERTSON, D L, 15B PATEKE PLACE, LINWOOD, CHRISTCHURCH
ZL3TDS TAYLOR, E G, 24 STALKERS ROAD, WOODEND BEACH, RD 1, KAIAPOI
ZL3TDY CAVILL, J P, 1 EVERGREEN CRESCENT, HERETAUNGA, UPPER HUTT 6007
ZL3TEC Harrison, S J, 107 Kippenberger Ave, Rangiora
ZL3TEL LEU, E T-C, 19 CAMROSE PLACE, ILAM, CHRISTCHURCH
ZL3TFD RHODES, D, PO BOX 125, AKAROA
ZL3TFI WRIGHT, B A, 64 TENNYSON STREET, CHRISTCHURCH 2
ZL3TFJ LUNDY, R J, 10 ALPERS PLACE, HILLMORTON, CHRISTCHURCH 8002
ZL3TFK WEIR, R G, 64A SELWYN ST, CHRISTCHURCH
ZL3TFM SMITH, B D, 88C CLYDE ROAD, FENDALTON, CHRISTCHURCH
ZL3TFN WOOD, K L B, 126 PIKARERE ST, TITAHI BAY
ZL3TFQ LEWIS, R L,
ZL3TFW VAN TIL, H J, 128A ST JAMES AVE, CHRISTCHURCH 8005
ZL3TFY TIZZARD, R W, 9 CHEVY PLACE, CHRISTCHURCH
ZL3TG COPLAND, G M, 38 HALTON ST, CHRISTCHURCH 5
ZL3TGB GRAHAM, J C, 4 NGAUMATAU RD, PT HOWARD, LOWER HUTT 6008
ZL3TGF RAE, P D, 28 Beatrice Place, Avonhead, Christchurch
ZL3TGG GROOM, C B G, 18 QUEENS AVE, WAIKUKU BEACH 8254
ZL3TGN NALDER, G W,
ZL3TGR TIMEWELL, I D, PO BOX 706, TIMARU
ZL3TGS OLIVER, A J, FLAT 2 32B HUNTSBURY AVE, CHRISTCHURCH 2
ZL3TGV WINSLADE, R H, 15 HUNT ST, TIMARU
ZL3TGX HENRY, D H, 34 ALEXANDRA ST, CHRISTCHURCH
ZL3THB CREE, R A, 14 PLAINS VIEW, MT PLEASANT, CHRISTCHURCH
ZL3THI WEALLEANS, G A, 37 EGLINTON ST, CHRISTCHURCH 8007
ZL3THP PLATT, R G, 0816 JONES ROAD RD 5, ROLLESTON
ZL3THQ CORBETT, R K, 256 JOWERS ROAD, RD 6, CHRISTCHURCH
ZL3THW CORBETT, P O BOX 38078, CHRISTCHURCH
ZL3TIK RODGERS, P N, 29 PORTER ST, ASHBURTON
ZL3TIL ERRINGTON, J G, 15 RODERICK ALLEYN LANE, PAPANUI, CHRISTCHURCH
ZL3TIQ MCCORKINDALE, D R,
ZL3TIV VAN HOOF, IVAN,
ZL3TIW PLATT, B J, 0816 JONES ROAD RD 5, ROLLESTON
ZL3TIX STEVENS, J B, GENESIS DRIVE, R D 1, WEST MELTON 8021
ZL3TJ WILSON, P J, 107 SEATOUN HEIGHTS RD, MIRAMAR, WELLINGTON 6003
ZL3TJA THOMSON, D A J, PO BOX 212, TIMARU
ZL3TJC BRIGGS, N E, 124 RIVERSIDE DRIVE, WHAKATANE
ZL3TJF KING, T J, 95 HOON HAY RD, CHRISTCHURCH
ZL3TJH ROBINSON, P J, 10 TAKAHE DRIVE, CHRISTCHURCH 2
ZL3TJJ WARD, A J, 178 BRIDLE PATH RD, CHRISTCHURCH
ZL3TJL LYE, R D, 7 CROMER PLACE, CHRISTCHURCH
ZL3TJM DILLON, G A, P O BOX 28-164, CHRISTCHURCH
ZL3TJN HILLS, M P, HALCOMBE ROAD, R D 5, FEILDING
ZL3TJS WHITFIELD, B W, 14 MARRINER STREET, SUMNER, CHRISTCHURCH 8008
ZL3TJU MCCONNELL, M M, 111 GARDINERS RD, CHRISTCHURCH
ZL3TJV OSBORNE, K W, 51 BARNES ST, GLENWOOD, TIMARU
ZL3TJW RICKARD, B S,
ZL3TJX LAUGHTON, T J, 32 WOOSIDE COMMON, CHRISTCHURCH 8002
ZL3TJY ALLAN, S E, EGANS RD, RD 1, RANGIORA
ZL3TK MARTIN, D F, C/- DIXON HOUSE, BRUNNER STREET, GREYMOUTH 7801
ZL3TKA GUMBRELL, C B, 17 ROPATA CRES, BOULCOTT, LOWER HUTT
ZL3TKB Butcher, Kim, 10 Raven Drive, RD 4, Christchurch
ZL3TKI EMPSON, T M, PO BOX 13-076, CHRISTCHURCH
ZL3TKQ MCINNES, G W, SYSTEMS 90, 18 BIDWELL PLACE, CHRISTCHURCH 3
ZL3TKR DWYER, D S, 5 ZENA PLACE, BURWOOD, CHRISTCHURCH
ZL3TKV LANG, A N, 62 RAHERA ST, CHRISTCHURCH
ZL3TKX PATTERSON, H W, 33 LEINSTER TCE, LINCOLN
ZL3TKZ GRUMBALL, P J, 52 NEWNHAM ST, RANGIORA
ZL3TL PATERSON, M S, 120 HASTINGS ST EAST, CHRISTCHURCH
ZL3TLA O'DONNELL, L A, 39 MELTON ST, TIMARU
ZL3TLB CRAWFORD, C R, 89 JOSEPH BANKS DRIVE, WHITBY, WELLINGTON
ZL3TLE WEIR, D R, 64A SELWYN ST, CHRISTCHURCH
ZL3TLJ MCCONNELL, D A, 111 GARDINERS RD, CHRISTCHURCH
ZL3TLN DIGBY, C M, 4 NORFOLK ST, CHRISTCHURCH
ZL3TLQ HARRALL, E D, 90 GAYHURST RD, CHRISTCHURCH
ZL3TLT HARRALL, 442 PINE HILL RD, DUNEDIN
ZL3TLW PERRY, S J, 31 FUSILIER ST, CHRISTCHURCH
ZL3TLX VICKERS, L W, 17 WALKERS RD, LYTTELTON
ZL3TM BUCHANAN, W A, 10 MCGOWAN STREET, RUNANGA, VIA GREYMOUTH
ZL3TMB BARNES, M S, PO BOX 218, CHRISTCHURCH
ZL3TMF WILSON, J O, 15 BARNHILL CRES, PAPAKURA, AUCKLAND
ZL3TMI WILSON, D A, 58 LANE ST, ALLENTON, ASHBURTON
ZL3TML ATTEWELL, D R, 40 BUCHANANS RD, CHRISTCHURCH 8004
ZL3TMQ POT, M J, 6 TE KITEROA GROVE, WELLINGTON 4
ZL3TMS SEAY, M G, PO BOX 7405, CHRISTCHURCH
ZL3TMT SULLIVAN, B, 155 SHORTLAND ST, CHRISTCHURCH
ZL3TN DOWLING, D W,
ZL3TNC ANDREW, E D B, 448B HAREWOOD RD, BISHOPDALE, CHRISTCHURCH
ZL3TNH DROWLEY, C A, 47 CHESTER ROAD, TAWA, WELLINGTON 6006
ZL3TNJ DAVIS, B, 40 LAING CRES, CHRISTCHURCH 8002
ZL3TNK VON BIEL, H A, 15 Caleb Place, Northwood, Belfast
ZL3TNL MAUNSELL, P B, 42 HINEMOA ST, CHRISTCHURCH 8002
ZL3TNO PEARCE, S J, 11 MELFORD CLOSE, RANGIORA
ZL3TNQ AMTMAN, B L, 28A WHITMORE ST, RICHMOND, CHRISTCHURCH
ZL3TNS CLAY, P D, 5 APPLEBY HIGHWAY, RICHMOND 7002
ZL3TNT FRASER, A L, PO BOX 12, WAIPARA 8270
ZL3TNY BROWN, S D, 78A HACKTHORNE RD, CHRISTCHURCH
ZL3TO GODKIN, R W, 147 AVONDALE RD, CHRISTCHURCH 8007
ZL3TOC MARSHALL, R W, 19 FRASER CRES, TWIZEL
ZL3TOF WARREN, P A,
ZL3TOH FORDYCE, A A, 26 LODGE PLACE, ILAM, CHRISTCHURCH
ZL3TOI KING, A F, FLAT 2, 363 WITHELLS RD, CHRISTCHURCH
ZL3TOJ MEYERS, D R, PO BOX 14, RANGIORA
ZL3TOZ HURST, D W, 31 WAKANUI RD, ASHBURTON
ZL3TP MACLEAN, A G, 9 HORTON ST, PLEASANT POINT
ZL3TPD PITCAITHLY, D J, 9 WITBROCK CRESCENT, BURNSIDE, CHRISTCHURCH 8005
ZL3TPE OBERS, W L T, 154 ROSS ST, INVERCARGILL
ZL3TPJ JARVIS, P J, SANDY KNOLLS RD, RD 1, CHRISTCHURCH
ZL3TPN PERKINS, N D, PO BOX 86, MURCHISON
ZL3TPO TURNBULL, P D, 3B ARMITAGE ST, NGAIO, WELLINGTON
ZL3TPQ TRUMP, M, FLAT B, 36 BURNETT STREET, ALLENTON, ASHBURTON
ZL3TPS STEWART, P D, 12 BENMORE ST, TIMARU
ZL3TPT THOMPSON, B N, 18 GUNNS CRES, CHRISTCHURCH 8002
ZL3TPY FOTHERINGHAM, J P, 35A PARNELL ST, LOWER HUTT
ZL3TQ AGNEW, G A, 10 ROBYN PLACE, LINCOLN, CHRISTCHURCH
ZL3TQD ROXBURGH, J G, 13 POUND ST, LEESTON
ZL3TQE AITCHISON, M S, 61 LONGFELLOW ST, CHRISTCHURCH
ZL3TQH WILTSHIRE, R, C/O BURNSIDE HIGH SCHOOL, GREERS ROAD, CHRISTCHURCH 5
ZL3TR HAYNES, J C, C/- PACIFIC HAVEN RESIDENTIAL CARE, 365 MARINE PARADE, SOUTH BRIGHTON, CHRISTCHURCH 8062
ZL3TRD DUNCAN, R J, 306 PALMERSTON STREET, WESTPORT
ZL3TRE CLEINE, N C, RD 2, UTOPIA RD, WESTPORT
ZL3TRI GRAHAM, J A, 18 RIVERTON TCE, HALSWELL, CHRISTCHURCH
ZL3TRJ SPURDLE, D P, 41 TAIT DRIVE, GREENMEADOWS, NAPIER
ZL3TRL PARKER, G T, 36 SHEFFIELD CRES, CHRISTCHURCH 8005
ZL3TRR REINKE, J M, 92 NEIL STREET, HORNBY, CHRISTCHURCH
ZL3TRT SAWYERS, T, CAPE RD, RD 2, WESTPORT
ZL3TRX HADLER, D J, SANDY KNOLLS RD, RD1, CHRISTCHURCH
ZL3TS PHILLIPS, S J, 138 HAY ST, LINWOOD, CHRISTCHURCH
ZL3TSM MILLER, N E, WHITEWOOD CRES, RD 5, CHRISTCHURCH 8021
ZL3TSW WEBB, S D, 3 SOMERVILLE LANE, BRIGHTWATER, NELSON
ZL3TT SMITH, K G, 20 GILRAY AVENUE, MARAENUI, NAPIER
ZL3TTS HAYWARD, L B, 45 DENISE CRES, HORNBY, CHRISTCHURCH

ZL3TUM MILNE, B J,
ZL3TUN REID, N, 1 BRACKEN COMMON, ROLLESTON 8004
ZL3TUV ROOKE, S A, 7/12 CURSON PLACE, PARKLANDS, CHRISTCHURCH 8009
ZL3TV SHAW, G R,
ZL3TVB MARTIN, B, 85 CANTERBURY STREET, LYTTELTON
ZL3TVK Donovan, Robin, 18 Glenview Terrace, Highfield, Timaru
ZL3TVS STUBBERFIELD, R, 138 RUTLAND ST, ST ALBANS, CHRISTCHURCH 8005
ZL3TW RILEY, T R, 20 REARSBY DRIVE, CHRISTCHURCH 3
ZL3TWH BURROWS, R M, 25A ESPERANCE ST, CHRISTCHURCH 8005
ZL3TX LAYT, P A, 15 KERRS RD, AVONSIDE, CHRISTCHURCH
ZL3TY MCQUARRIE, R J, 21 WEENINK RD, GREYMOUTH
ZL3TZ RIO, N N, 3 ROSENBAY RISE, HENDERSON, WAITAKERE
ZL3UA MULHOLLAND, F S T, PO BOX 21, LEITHFIELD BEACH
ZL3UAC CROSBY, A A, 13 PRINCES ST, WAIKARI 8276
ZL3UAD WOODFIELD, A R, 40B SEACLIFFE ROAD, HILLSBOROUGH, AUCKLAND
ZL3UBU WHITE, T C, PO BOX 24-285, EASTGATE, CHRISTCHURCH 8001
ZL3UBW CARRAN, P S, 50 BENGAL DRIVE, CHRISTCHURCH 8002
ZL3UCD ANDREWS, M P, 6 MANUEL PLACE, BISHOPDALE, CHRISTCHURCH
ZL3UCK BLANCHETT, C E L, 59 SHAKESPEARE ST, GREYMOUTH
ZL3UCM MANSON, CALEB, 138 HOON HAY ROAD, HOON HAY, CHRISTCHURCH
ZL3UD MCCONNACHIE, M E, 210 UNION STREET, MILTON 9250
ZL3UDH HETHERINGTON, D J, 43 OTIPUA RD, TIMARU
ZL3UDJ CROKER, D J, WAIMANGAROA POST, VIA WESTPORT
ZL3UDR ROBB, D W, 78 CONNAUGHT STREET, BLOCKHOUSE BAY, AUCKLAND
ZL3UDW WYSE, D, 16 ARRAN CRES, LINWOOD, CHRISTCHURCH
ZL3UE PRATTLEY, R H, RD 2, ELLESMERE RD, CHRISTCHURCH
ZL3UEO JENKINS, R C, 33 TOREA ST, GRANITY, WESTPORT
ZL3UF PRUE, B O, 111 UNION ST, CHRISTCHURCH
ZL3UFM CHILTON, N J, 52 WHITING CRESCENT, NAPIER
ZL3UFO FRASER, A J, PO BOX 12, WAIPARA
ZL3UGB BARBOUR, G, 168 PACIFIC RD, CHRISTCHURCH 8009
ZL3UGC COOK, G J, 33 NORMANDY ST, CHRISTCHURCH 8005
ZL3UGH HANCOCK, G P, 5/29 O'BRIENS RD, CHRISTCHURCH
ZL3UGT TURNER, G C, 83 BRIDGE STREET, SOUTH NEW BRIGHTON, CHRISTCHURCH
ZL3UGY BRIGGS, R D, 32 FIRTH STREET, COBDEN, GREYMOUTH
ZL3UHI HARDY, L M, 67 MOORE STREET, ROLLESTON
ZL3UI MEREDITH, F P R, 1215 KARAMU ROAD NORTH, HASTINGS
ZL3UIM WATSON, S, 27 READING STREET, ILAM, CHRISTCHURCH 4
ZL3UJZ BEST, G, 16 Champion St, St Albans, Christchurch
ZL3UK JULIAN, T, 154 HAMILTON AVENUE, ILAM, CHRISTCHURCH
ZL3UKM MANSON, K J, 74 SAPPHIRE ST, CASEBROOK, CHRISTCHURCH
ZL3ULP Crosby, Linda, Drynie, R D 3, Amberley
ZL3ULW WILLUM, L, 16 A STANTON PLACE, WOODEND 8255, CHRISTCHURCH
ZL3UN GILL, I D, RIVER RD, GREENPARK, RD 2, CHRISTCHURCH
ZL3UO GENET, R C A, 67A WINTERS RD, CHRISTCHURCH
ZL3UOK MAY, S T, 156 PAGES RD, TIMARU
ZL3UP MCNICHOLL, M W, 4 CORFE ST, CHRISTCHURCH
ZL3UPJ BUTCHER, P J, 10 RAVEN DRIVE, RD 4, CHRISTCHURCH
ZL3UR NZART SOUTH CANTERBURY BRANCH INC, PO BOX, 261, TIMARU
ZL3URB Butcher, Rebecca, 10 Raven Drive, RD 4, Christchurch
ZL3URN NAEYAERT, R, 65 GREENHAMVEN DRIVE, BURWOOD, CHRISTCHURCH
ZL3URR DE ROODE, H, PO BOX 35-151, THE PALMS, CHRISTCHURCH
ZL3USA MAY, A P, 30 NIKAU PLACE, TIMARU
ZL3USB Butcher, Sarah, 10 Raven Drive, RD 4, Christchurch
ZL3USM MANSON, S B, 138 HOON HAY RD, CHRISTCHURCH
ZL3USR REYNDERS, S, 393 BARBADOES STREET, CHRISTCHURCH
ZL3UU GORDON, M, 6 MACARTNEY AVENUE, HALSWELL, CHRISTCHURCH 8003
ZL3UX VINCENT, L L, LISMORE, RD 5, ASHBURTON
ZL3UXB MORGAN, J H, P O BOX 15092, CHRISTCHURCH 8006
ZL3UXT MACKLEY, G D J, PO BOX 12-926, PENROSE, AUCKLAND 1135
ZL3UYJ PAGE, A, 1-14 CROZIERS ROAD, ST ALBANS, CHRISTCHURCH
ZL3UZ MCKENZIE, C D, 17 HULVERSTONE DRIVE, CHRISTCHURCH
ZL3VA JOHNSTONE, D E, 4A PARKWOOD PLACE, PARKLANDS, CHRISTCHURCH
ZL3VAA ORCHARD, A P, 4 WILSON DRIVE, OHOKA, R D 2 KAIAPOI
ZL3VAB ORCHARD, J, 4 WILSON DRIVE, OHOKA, R D 2 KAIAPOI
ZL3VAH BLANCHARD, H E G, 37 REYNOLDS AVE, BISHOPDALE, CHRISTCHURCH
ZL3VAL BOOTE, V Z, 8 HINTON RD, KARORO, GREYMOUTH
ZL3VAM BROOK, P C, 130 KIPPENBERGER AVENUE, RANGIORA
ZL3VAP PETERSEN, V A, 51 DERBY ST, WESTPORT
ZL3VAS STEPHENS, L C, 78 BROUGHAM ST, WESTPORT
ZL3VAT AXFORD, B R, 94 OMOTO VALLEY RD, KAIATA, GREYMOUTH 7823
ZL3VBC PRATT, A, 30 DEEPDALE STREET, BURNSIDE, CHRISTCHURCH
ZL3VC MCLAUGHLIN, P T, 42 DOMETT ST, WESTPORT
ZL3VF KENDALL, J D, 50 PAGET DRIVE, WOODEND 8255
ZL3VI MELHUISH, B J, 34 ST ANDREWS HILL RD, CHRISTCHURCH
ZL3VII SINCLAIR, D A, 17 HALLS PLACE, ADELAIDE, SOUTH AUSTRALIA
ZL3VIP MCISAAC, I B, THE SHIRE, POWELLS RD, OXFORD 8253
ZL3VJP PAYNTER, J J, 42 FORTUNE ST, CHRISTCHURCH
ZL3VJX MILLIGAN, T J, PO BOX 21-053, EDGEWARE, CHRISTCHURCH
ZL3VK LAWRENCE, J E, 25 ANDREW ST, TIMARU
ZL3VL JACKSON, E M, 87 MAIN ROAD, WAIHI BEACH
ZL3VLF BRIGGS, D J, 100A NORMANDALE RD, NORMANDALE, LOWER HUTT
ZL3VLN NEAME, L A D, 13 COWPER STREET, GREYMOUTH
ZL3VM WILSON, D W T, 77 ALLENS ROAD, ASHBURTON
ZL3VML VENTER, M L, 30 MANOR PLACE, BRYNDWR, CHRISTCHURCH
ZL3VN BRADLEY, J N, 169 WESTON RD, CHRISTCHURCH
ZL3VO ELDER, J, 30 MALING ST, CHRISTCHURCH
ZL3VP BRADSHAW, G J, 163A ASHGROVE TCE, CHRISTCHURCH
ZL3VQR RAMSAY, I, P O BOX 19, MIDDLEMARCH 9056
ZL3VR MCMASTER, A S, 8A HARRIS STREET, WAIMATE
ZL3VS UDEN, M, 77 TANKERVILLE RD, HILLORTON, CHRISTCHURCH
ZL3VV CHRISTCHURCH WEST AMATEUR RADIO CLUB, PO BOX 31-095, CHRISTCHURCH
ZL3VW WINSKILL, I E, CAVERHILL, RD 1, CHEVIOT
ZL3VX PARRY, R I, 18 SUNVALE TCE, CHRISTCHURCH
ZL3VY DIXON, A P, 16 KILDARE TCE, LINCOLN
ZL3VYL O'MALLEY, M J, 72 CROFTON RD, CHRISTCHURCH
ZL3VZ PATERSON, A J, 52 CAVENDISH RD, CHRISTCHURCH
ZL3WA ALLEN, R W, 11 CHEAM ST, DALLINGTON, CHRISTCHURCH 8006
ZL3WAR WELLS, R J, P O Box 13, Outram
ZL3WBA ANDERSON, B M, MCLEODS ROAD, RD, ROSS 7954
ZL3WC REEVES, N J, 45 OROWAITI RD, WESTPORT
ZL3WD BAGNALL, A L, 44 RICHARDSON STREET, ST KILDA, DUNEDIN
ZL3WDB MANSON, D B, 7 BROCKENHURST ST, CHRISTCHURCH 8007
ZL3WE LONGSON, H J O, 21 KINNARD PLACE, CHRISTCHURCH
ZL3WEJ MCISAAC, J A, THE SHIRE, POWELLS RD, OXFORD
ZL3WEM MANSON, E M, 7 BROCKENHURST STREET, WAINONI, CHRISTCHURCH
ZL3WG BAIRD, J F, 13A CHARLESWORTH STREET, FERRYMEAD, CHRISTCHURCH
ZL3WGM MCDONALD, G K, 55 O'NEILL AVENUE, NORTHWOOD, CHRISTCHURCH
ZL3WIM MACKAY, I M, 5 SPITFIRE PLACE, WIGRAM, CHRISTCHURCH
ZL3WK WELLS, K, PO BOX 514, RANGIORA
ZL3WM OLIVER, J A, PO BOX 22, TAI TAPU
ZL3WMD DOWLE, W M, CLANAGH, 103 BRUCES ROAD, SEFTON, RD 2, RANGIORA
ZL3WMM HAY, G B, 37 CHAPEL ST, GREYMOUTH
ZL3WNG BYAS, B, 250 OPAWA ROAD, HILLSBOROUGH, CHRISTCHURCH
ZL3WNP PARKINSON, N I, RD 2, PUKETA, KAIKOURA
ZL3WO WELSH, L D, 18 WOODLAND PLACE, CHRISTCHURCH
ZL3WP BULLER HIGH SCHOOL RADIO CLUB, 35 DERBY ST, WESTPORT
ZL3WPS SEMMENS, W P,
ZL3WPT MCLAUGHLIN, K M, 42 DOMETT ST, WESTPORT
ZL3WQ MACKEY, C J, 1 CAMP ST, AHAURA
ZL3WR MARTIN, V E, 51 SKERTEN AVE, HORNBY, CHRISTCHURCH 8004
ZL3WS STEIN, WILLEM, 48 CAMBRIA STREET, NELSON
ZL3WT STEIN, PO BOX 18-530, CHRISTCHURCH
ZL3WU WRIGHT, A F, 65 LUDSTONE RD, KAIKOURA
ZL3WV RIGBY, F, 81 JOHNS ROAD, RANGIORA
ZL3WW DUMANOVIC, DUSKO, 28 GIBRALTAR CRESCENT, PARNELL, AUCKLAND
ZL3WX SMILLIE, B, 19 GREENFIELD PLACE, CHRISTCHURCH
ZL3WY YEATES, J M, 69 ST ANDREWS HILL RD, CHRISTCHURCH
ZL3WZ MORGAN, W R, 5 HAWKSWOOD STREET, WAIAU 8275, NORTH CANTERBURY
ZL3ZMV KENNEDY, M A, 56 DOMMETT ESPLANADE, COBDEN, GREYMOUTH
ZL3ZZZ MCDONALD, D M, KNIGHTS ROAD, RD 5 ROLLESTON, CHRISTCHURCH

ZL4 CALL-SIGNS

ZL40AGY MARR, A H, PO BOX 3, GREYTOWN
ZL4AA NZART OTAGO BRANCH INC, PO BOX 5485, DUNEDIN
ZL4AAA COOPER, R B, PO BOX 330, MANGONUI
ZL4AAK DEVEREUX, R L, DANIELS RD, KINGSDOWN, RD 1 TIMARU
ZL4AB GRAY, H A, 102 BROWNSTON ST, WANAKA
ZL4AC LOWE, A F, 287 BARROW ST, BLUFF
ZL4ACG GLENNIE, A C, 31 JOHN STREET, OTATARA R D 9, INVERCARGILL
ZL4AD COOK, B J, 38 MILL ROAD, WAIMATE, SOUTH CANTERBURY
ZL4AE OLSEN, W J, 21 MUSSELBURGH RISE, MUSSELBURGH, DUNEDIN
ZL4AEA ANDERSON, ATHOL, 64 TAWARD STREET, NORTH OAMARU, OAMARU 8901
ZL4AF FALCONER, A E, PO BOX 214, WHITERIG, GORE
ZL4AFM APPLEBY, R, 17-A LYNTON RD, BUCKLANDS BEACH, AUCKLAND 1704
ZL4AG BOSHIER, R F, 30 AYTON DRIVE, GLENFIELD, AUCKLAND 1310
ZL4AH SCUDAMORE, E G, FAIRVIEW, TOTNESS ST, GREEN ISLAND
ZL4AHW WILLIAMS, NOEL, 174 Tramway Rd East, RD 3, Wyndham
ZL4AI KING, J A, 169 CARROLL STREET, CITY RISE, DUNEDIN 9001
ZL4AJ THOMPSON, J S,
ZL4AJS SUNDE, A J, 70 HASTINGS STREET, OHAI, SOUTHLAND
ZL4AK Pickering, Luke,
ZL4AL EASTERN SOUTHLAND BRANCH NZART INC, C/O MR AN ALLAN RD 4, CHARLTON, GORE
ZL4AM BLAIR, J G H, 5 MERRIE CREEK RD, CLINTON
ZL4AN SHAW, M Y, C/- NZMCA, P O BOX 72 147, PAPAKURA 1730
ZL4ANW NEWTON, A A, 75 BANKS ST, RICHMOND, INVERCARGILL
ZL4AO ALLAN, A N, RD 4, CHARLTON, GORE
ZL4AP SMITH, R C, 104 RETREAT ROAD, NO 2 RD, INVERCARGILL
ZL4APC CHALMERS, A, PO BOX 285, GORE
ZL4AQ WHYTE, R A, 8 MARGARET STREET, GORE 9700
ZL4AR COLE, R S, 46 WALTON PARK AVE, FAIRFIELD, DUNEDIN
ZL4AS GRAY, L C, GRAYLEA, STONEYCREEK 2 R D, BALCLUTHA 9200
ZL4AT TAYLOR, A J, 37 DIPTON ST, INVERCARGILL
ZL4AU ERNST, R W, ROSLYN BUSH RD, RD 2, INVERCARGILL
ZL4AV CHRISTIE, G A, 37 GARNET ST, GORE
ZL4AW PICKFORD, W J, 29 BLACK RD, OTATARA RD 9, INVERCARGILL
ZL4AY MCLEOD, J H, 23 RICKTON PLACE, RANGIORA 8254
ZL4AZI BOIVIN, R A, 69 TAWARD STREET, OAMARU
ZL4BA JONES, G L, 10 BARCLAY ST, DALMORE, DUNEDIN
ZL4BAM MCMILLAN, B A, 24 MINERS TCE, BANNOCKBURN, RD 2 CROMWELL
ZL4BDA AMOAFO, B, 59 MOMORANGI CRESCENT, REDWOOD, CHRISTCHURCH
ZL4BE ELLIOTT, BARRY, 51 BEECHWOOD DRIVE, BELFAST, CHRISTCHURCH
ZL4BEP PATON, BRUCE, RIDGE ROAD, 2 CRD, OAMARU
ZL4BH HERLIHY, B K, 20 KEA PLACE, TOKOROA
ZL4BI CALDWELL, J, 54 BRYDONE ST, EDENDALE
ZL4BJ WICKENS, J R, 21 MARINE PARADE, MACANDREW BAY, DUNEDIN
ZL4BJC CHAPMAN, B J, 38 MOULSON ST, INVERCARGILL
ZL4BK MCDONALD, B N, 18 TRAVIS COUNTRY DRIVE, BURWOOD, CHRISTCHURCH
ZL4BL LAIRD, B, 30 B BROUGHTON STREET, GORE 9700
ZL4BM MCCALLUM, R H, RD, ASHLEY DOWNS, CLINTON
ZL4BO JACKSON, V R, 514 QUEENS DRIVE, INVERCARGILL
ZL4BR HUNT, A F, 8 MANU CRES, NEW PLYMOUTH
ZL4BRI HOWLETT, B, 156 LARNACH ROAD, WAVERLEY, DUNEDIN
ZL4BS ALDRIDGE, J T, 28 CREEK RD, ASHBURTON
ZL4BT TODD, R J, 30 NAUMAI ST, GORE
ZL4BU STEPHENS, R D, 72 WILFORD ST, INVERCARGILL
ZL4BV Vidulich, B, 12 Ngarimu Crescent, Taradale, Napier
ZL4BW WILLIAMSON, B C, 14 HORACE ST, CROMWELL
ZL4BWM MIDDLEMISS, B W, 112 MARGARET ST, INVERCARGILL
ZL4BX SIMPSON, R K, 1018 BRIGHTON RD, BRIGHTON
ZL4BZ EVE, C R, 107 BREAM BAY DRIVE, RUAKAKA
ZL4CA WILLIAMSON, P, LEICESTER STREET, HAMPDEN
ZL4CAT CALLOW, PETER, 24 WAIKARAKA DRIVE EAST, R D 6 TE PUNA, TAURANGA
ZL4CD DUPONT, C C, 6 LOTHIAN CRES, INVERCARGILL
ZL4CFT DUPONT, PO BOX 36, ROXBURGH, CENTRAL OTAGO
ZL4CG RACKLEY, A M, 36 CRAIG HENDRY ST, GREEN ISLAND, DUNEDIN
ZL4CHS STEWART, C H, 29 PAISLEY PLACE, INVERCARGILL
ZL4CI STRONACH, N, 26 LAKEFRONT DRIVE, TE ANAU
ZL4CJ O'CAIN, P J, 85 BAYNESS STREET, BURWOOD, CHRISTCHURCH 8006
ZL4CJS STAYNES, C J,
ZL4CKR READ, C K, 218 MANHIRE RD, TE PUNINGA, RD 4, MORRINSVILLE
ZL4CL LARSEN, C M, 26 COLUMBA AVE, LOOKOUT POINT, DUNEDIN
ZL4CO SMITH, J D, 78 SUNDERLAND STREET, CLYDE
ZL4CP SHEA, D A, 15 GERALDINE ST, GREYMOUTH
ZL4CR Lupulescu, C R, 3/219 Geraldine Street, Edgeware, Christchurch
ZL4CSS SHIRREFFS, C S, 134 GLADSTONE TERRACE, INVERCARGILL
ZL4CU DUDLEY, G J, 47 VOGEL PLACE, INVERCARGILL
ZL4CV MCKENZIE, J, 104 TRAFALGAR ST, WAIWHETU, LOWER HUTT
ZL4CVE HALFORD, J T, 25 RICHMOND AVENUE, NELSON
ZL4CW BARKER, W G, 30 KOWHAI AVE, INVERCARGILL
ZL4CWN DOAK, D, 289 CHEMSFOND STREET, ROSEDALE, INVERCARGILL
ZL4DA ANDERSON, D W, P O BOX 7, CLYDE, CENTRAL OTAGO
ZL4DAM MOREY, D A,
ZL4DAV Wright, David A J, P O Box 537, Nelson
ZL4DB BROWNE, D J, 133 RESERVOIR RD, OAMARU 8901
ZL4DBM BROWNE, 14 REES STREET, DUNTROON
ZL4DC HALL, S J, 54A KENMURE RD, BELLEKNOWES, DUNEDIN
ZL4DD VAN VEEN, H M G, 161 EVANS ST OPOHO, DUNEDIN
ZL4DH SINGLETON, F C, 25 MCKINNON LOOP, TE ANAU
ZL4DI BAIN, C R, 27 DUCKWORTH ST, DUNEDIN
ZL4DIK DICKIE, R A, 14 KOA STREET, GORE
ZL4DJ BAIRD, R A, 87 VENTRY ST, ALEXANDRA 9181
ZL4DJW BAIRD, 82 KITCHENER, GORE
ZL4DK MULDER, D J, 266 CHAIN HILLS RD, RD1, DUNEDIN
ZL4DLU URE, D, 6 Arnott Sreet, Portobello, Dunedin
ZL4DM BEATTIE, M J, 10B FIFE ST, WAKARI, DUNEDIN
ZL4DMM MYOCK, D,
ZL4DN SHARP, J R, 72A BAYVIEW RD, DUNEDIN
ZL4DO OLSEN, D W J, 65 ROSEBERRY STREET, BELLEKNOWES, DUNEDIN
ZL4DQ MASLEN, I A, 62 CHAMBERS ST, DUNEDIN
ZL4DR IRVING, J T, 28 KING ST, MOSGIEL
ZL4DRB BOWIE, D R, 7 MIDDLETON ROAD, UPPER RICCARTON, CHRISTCHURCH
ZL4DU BOWEN, P D O, 207 TAIERI RD, DUNEDIN
ZL4DW BABINGTON, A M, 45 THOMSON ST, INVERCARGILL
ZL4DWW WRIGHT, D W, 309 TALBOT ST, INVERCARGILL
ZL4DX BRASELL, C R, 10 WAIMATUA SCHOOL RD, WAIMATUA RD11, INVERCARGILL
ZL4DY Shuker, W, 26 Hillary Cres, Napier
ZL4FA SPITTLE, B J, 727 BRIGHTON ROAD, OCEAN VIEW, DUNEDIN 9051
ZL4FC DOMINEY, R J, 67 KING ST, PARKSIDE, TIMARU
ZL4FD HEDGE, H G, 35 WEITI ROAD, OREWA, WHANGAPARAOA 1461
ZL4FG RUSSELL, P F, 140 Aicken Rd, Otatara, No. 9 R.D
ZL4FH HALL, J N, 8 WATKIN ST, DUNEDIN
ZL4FI ASKIN, M G, 408 HAREWOOD ROAD, BISHOPDALE, CHRISTCHURCH
ZL4FM WILDEN, A J, 43 BALMAIN ST, HALFWAY BUSH, DUNEDIN
ZL4FOX KINDT, B, PO BOX 7227, WELLESLEY ST, AUCKLAND
ZL4FP MCLEOD, R J, 431 GORDON ROAD, RD 2, MOSGIEL, OTAGO
ZL4FS FAULKNER, D N, 40 WYMER TCE, HAMILTON
ZL4FUN NEW ZEALAND ASSOCIATION OF RADIO TRANSMITTERS INC, PO BOX 40-525, UPPER HUTT 6415
ZL4FV WILLOUGHBY, J R, 18 REGENT ST, INVERCARGILL
ZL4FZ SMART, R G, 26 OLIVINE ST, CHRISTCHURCH
ZL4GA HOMER, G C, 5 CONWAY ST, MACANDREW BAY, DUNEDIN
ZL4GB BENNETT, G J, 47 TASMAN RD, OTEMATATA
ZL4GD WILKEY, T G, 68 MARINE PARADE, BLUFF
ZL4GE HURRING, C J, 1A BELMONT LANE, DUNEDIN
ZL4GF BALAN, S C,
ZL4GFG GEORGE, G F, 105B MELBOURNE STREET, SOUTH DUNEDIN
ZL4GG BODDY, K H, EARNSCLEUGH RD, RD 1, ALEXANDRA
ZL4GI GOLLOP, P J, FLAT 6, 202 CRINAN STREET, INVERCARGILL
ZL4GJ SERVICE, T R, 5 BREMRIDGE PLACE, HAMILTON
ZL4GK COLVIN, L J, 19 HIRINI STREET, GISBORNE
ZL4GL GILDER, N J, 37 POMONA ST, GORE
ZL4GM ELLIS, D N, PO BOX 34-499, BIRKENHEAD, AUCKLAND 1330
ZL4GO THOMAS, M E, 27 STIRLING CRES, MOSGIEL
ZL4GP MCCUTCHEON, M C, 145 TARBERT ST, ALEXANDRA
ZL4GQ NZART SOUTHLAND BRANCH INC, PO BOX 1260, INVERCARGILL
ZL4GR WATSON, D K, 114 CANNINGTON RD, DUNEDIN
ZL4GT SKINNER, L C, 36 DANIELS RD, REDWOOD, CHRISTCHURCH
ZL4GU BRENTWOOD, P L, SLOPEHILL ROAD, R D 1, QUEENSTOWN 9692
ZL4GV WILKEY, D G, 68 MARINE PARADE, BLUFF
ZL4GVN THOMPSON, G T, 71 PATERSON STREET, INVERCARGILL
ZL4GW WALSH, G J, 37 EDITH ST, FAIRFIELD, DUNEDIN
ZL4GX COLLIE, D B, 16 IONA COURT, INVERCARGILL

ZL4GY WILLS, M E, 181 WILTON STRET, ROSEDALE, INVERCARGILL 9501
ZL4HA YOUNG, B S, 39 MELVILLE ST, CITY RISE, DUNEDIN
ZL4HAM MCKENZIE, H A, WAIPARU, RD 7, GORE
ZL4HC WATERS, M J, 6 BARLING ST, MACANDREW BAY, DUNEDIN
ZL4HD HARDWICK, T R, 126 BARROW ST, BLUFF
ZL4HES STEPHENS, H E, 128 MULLER RD, BLENHEIM
ZL4HF KINDON, H A R, 10 TREFFERS AVE, RANGIORA
ZL4HG MCNEILL, S J E, 44 STANBURY AVE, SOMMERFIELD, CHRISTCHURCH 8002
ZL4HI BRUCE, F, 22 REYNOLDS DRIVE, GLENVIEW, HAMILTON 2001
ZL4HL SMIRK, A H C, 3 LITTLEBOURNE ROAD, ROSLYN, DUNEDIN
ZL4HM WHELAN, M L, 3 / 239 SPEY STREET, INVERCARGILL
ZL4HO SUTTON, K E, 97 GREY ST, INVERCARGILL
ZL4HP HANNA, PADDY, PO BOX 10 301, THE TERRACE, WELLINGTON 6036
ZL4HQ WILLIAMS, J C, 115 VEITCHES RD, CHRISTCHURCH
ZL4HR NISBET, G J, 33 SUTCLIFFE ST, DUNEDIN
ZL4HS MARSH, W J, 47A HOPE DVE, BLENHEIM 7301
ZL4HT POWLEY, D M L,
ZL4HU HOLDOM, K A, PO BOX 7, CLYDE 9180
ZL4IAN FERGUSON, ROBERT DAVID, 4 EDEN PARK DRIVE, ROTOTUNA, HAMILTON
ZL4IC COCKERAM, M R, 126 ARGYLE-OTAHUTI RD, RD 4, INVERCARGILL
ZL4IE SAPWELL, H W D, WILSON COURT, 1/251 TANCRED ST, ASHBURTON
ZL4IEJ JONES, I E, RAMSAY ST, ALLANTON, RD 2, MOSGIEL
ZL4IG MCNEILL, R G, 44 DUKE ST, INVERCARGILL
ZL4II HOLLEBON, K W, RD 2, IRVINE RD, DUNEDIN
ZL4IJ DUERDEN, T W M,
ZL4IM NORTON, J, PUKERAU, RD1, GORE, SOUTHLAND
ZL4IO MALKIN, M J, 4/412 AVENUE RD WEST, HASTINGS
ZL4IQ KNOWLES, D C, 28 RATA RD, TWIZEL
ZL4IR HARTZ, E, PO BOX 9, TE ANAU
ZL4IS SMIRK, B A, 10 KARETAI RD, RD 2, DUNEDIN
ZL4IT SAWERS, R N, 29 DONCASTER ST, UPPER RICCARTON, CHRISTCUURCH
ZL4IX HASLER, D G, 10 MEON ST, OAMARU
ZL4IY PIERCY, G H, 11 BAMBOROUGH ST, INVERCARGILL
ZL4IZ JEFFERY, I W, 7 POINT BUSH RD, WAIMATE
ZL4JA BIRSE, K C, 14 MARTBERN CRES, CHRISTCHURCH
ZL4JAD DELL, J A, 234 HIGHCLIFF ROAD, WAVERLEY, DUNEDIN
ZL4JB BAZSIKA, J J, 57 ASCOT STREET, ST KILDA, DUNEDIN 9001
ZL4JC MCLENNAN, E J, 161 HALL RD, SAWYERS BAY, DUNEDIN
ZL4JD DUDLEY, J T, 11 FRASER ST, WAIKIWI, INVERCARGILL
ZL4JF NZART SOUTH OTAGO BRANCH 35, C/O C GRAY, GRAYLEA STONY CREEK, RD 2 BALCLUTHA
ZL4JG GILCHRIST, L J, 20 SADDLEVIEW PLACE, FAIRFIELD, DUNEDIN
ZL4JH BALCH, R M, 23 CONNELL ST, DUNEDIN
ZL4JJ FERRIS, R J, 269 STOKES VALLEY RD, STOKES VALLEY
ZL4JJC LODGE, G J, 43A HOLDAWAY STREET, BLENHEIM
ZL4JJT THOMPSON, J J, 71 PATERSON STREET, INVERCARGILL
ZL4JK STANTON, M, 18 Waimea Street, GORE
ZL4JL STEWART, R D, 4 ARAWA ST, GORE
ZL4JN HAIG, A V, 43 MELBOURNE ST, DUNEDIN
ZL4JO MALEY, G K, 31 ORBELL STREET, TIMARU
ZL4JP MCKENZIE, G A, RD 7, WAIPARU, GORE
ZL4JQ TORRANCE, A M, PO BOX 864, NEW PLYMOUTH
ZL4JR ARMSTRONG, J F, PO BOX 10-078, DUNEDIN
ZL4JRR RABBIDGE, J, 9 HOBSON ST, GORE
ZL4JS SAYER, J B, 235 UPPER PLAIN RD, MASTERTON
ZL4JT JENNINGS, J T, 15 COOLOCK ST, DUNEDIN
ZL4JU MIDDLETON, C H, 10B LANES ROAD, ALEXANDRA
ZL4JW WATSON, R J, PO BOX 2066, QUEENSTOWN
ZL4JWA ANDREWS, J W A, 94 CARNAVON COURT, INVERCARGILL
ZL4JWJ JENNINGS, John, PO Box 1189, Cambridge
ZL4JY YALDWYN, J S C,
ZL4KB GEARING, W J, LESLIE GROVES HOME, 22 SHEEN STREET, ROSLYN, DUNEDIN
ZL4KC CHRISTIE, K, 37 BOYNE STREET, CLIFTON, INVERCARGILL
ZL4KD DUFFY, K J, PO BOX 6025, INVERCARGILL
ZL4KF FRANCE, K N, ARTHURTON, NO1 R D, GORE
ZL4KH SHINE, D H J, 4 TUDOR LANE, MOSGIEL 9007
ZL4KHS KINGS HIGH SHCOOL RADIO CLUB, KINGS HIGH SCHOOL ATTN: KEVIN HAND, 270 BAYVIEW ROAD, DUNEDIN
ZL4KJ ROBERTSON, D C, 33 COUTTS ROAD, GORE 9700
ZL4KM CRAIG, A J, 71 MACKWORTH ST, CHRISTCHURCH 6
ZL4KN FINDLATER, R B, 305 CONON STREET, INVERCARGILL
ZL4KO WILLIAMS, T J, 8 ROB ROY LANE, WANAKA
ZL4KS ROSS, L A, 10 ROY CRES, CONCORD, DUNEDIN
ZL4KT WARING, D, PO BOX 118, WAITATI
ZL4KU TAYLOR, S J, 66 ROYAL TCE, ALEXANDRA
ZL4KV PATTON, J A, 18 KEATS TCE, CAMBRIDGE
ZL4KW KIBBLEWHITE, K C, 30 TRIPP STREET, R D 21, GERALDINE
ZL4KX MCCORMICK, B P, 39 MOANA CRESENT, MUSSELBURGH, DUNEDIN
ZL4KZ ANDREWS, P J,
ZL4LA Petrich, Christian,
ZL4LC EUNSON, L C,
ZL4LDS STRONG, L D, 29 CHURCH ST, MOSGIEL
ZL4LDY ALLEN, D C, 115A MUSSELBURGH RISE, DUNEDIN
ZL4LE EVANS, L M, RD 6, TUSSOCK CREEK, INVERCARGILL
ZL4LH MILSOM, P S, 103 LAKEVIEW TCE, LAKE HAWEA
ZL4LJ MACKENZIE, A I, 24 SCOTLAND ST, GREEN ISLAND
ZL4LJB Leslie, Bagnall, 114 Woodlands Close, Goldfield Heights, Queenstown
ZL4LK WHITTY, M J, 29/2 WILL ST, ABBOTSFORD, DUNEDIN
ZL4LL BENSON, J A, 15 HEATH ST, DUNEDIN
ZL4LN TALL, E J, 1 MURRAY ST, MOSGIEL
ZL4LO BRISTOW, H E, 17 GLENCARRON ST, ALEXANDRA
ZL4LS HOWIE, G A, 7 NORFOLK CLOSE, VICTORIA POINT, QUEENSLAND 4164
ZL4LT RICHARDS, F B, P O BOX 84-016, WESTGATE, AUCKLAND
ZL4LU COSTARD, T J, 17 STIRLING ST, DUNEDIN
ZL4LV JOHNSON, P W, SADDLE HILL RD RD 1, DUNEDIN
ZL4LX EVANS, R W, 15 TAIEPA RD, NO 9 R D OTATARA, INVERCARGILL
ZL4LZ TODD, L M, 30 NAUMAI ST, WEST GORE, GORE
ZL4MA ANDERSON, M H, PO BOX 6273, DUNEDIN NORTH
ZL4MB ANDREWS, S E,
ZL4MC COLLIGAN, M J, 29 KENMARE ST, ALEXANDRA, CENTRAL OTAGO
ZL4MD HAYES, K J, RIPPONVALE, RD 2, CROMWELL
ZL4ME MORTON, K W,
ZL4MG GILES, M S, 62 KOA STREET, GORE
ZL4MI GILES, 5 WAIMARINO ROAD, WEYMOUTH, AUCKLAND 1702
ZL4MJ MITCHELL, J S, 109 LAYARD ST, INVERCARGILL
ZL4ML LAMONT, M S, 3 GARDEN PLACE, DUNEDIN
ZL4MM MURRAY, R W, 101 INNESCOURT ST, CROMWELL
ZL4MN NORRIS, M,
ZL4MO ASKEY, A J, 30 MURANO ST, DUNEDIN
ZL4MP CRICHTON, J, 29 ANNE STREET, INVERCARGILL
ZL4MS SAVELL, MALCOLM, 126 REYNOLDS ROAD, R D 1, HAMILTON
ZL4MT MATTHEWS, R H, RD 1, MOKOTUA, INVERCARGILL
ZL4MU COOK, R K,
ZL4MV DAWSON, G L, 32 VERNON ST, INVERCARGILL
ZL4MW WARD, W T R, WEST PLAINS, RD 4, INVERCARGILL
ZL4MX GOVAN, W A, 14B RAVELSTON ST, DUNEDIN
ZL4MZ SHERLAW, W G, 30 CHURCH STREET, MOSGIEL 9007
ZL4NAJ JOHNSTON, N A, 33 HARBOROUGH STREET, WATLINGTON, TIMARU
ZL4NAK OCONNOR, F E, PO BOX 702, QUEENSTOWN
ZL4NC PATTERSON, B R, 66 KOREMATA ST, GREEN ISLAND, DUNEDIN
ZL4ND FOX, J F, 17 ETON DRIVE, BROOKLANDS VILLAGE, MOSGIEL
ZL4NG GRAY, N, PO BOX 1838, QUEENSTOWN
ZL4NI BRADDOCK, A R, 39 NORTON ST, GORE
ZL4NK KAN, N C Y, 90 NORTH RD, DUNEDIN
ZL4NO DAVIDSON, M, 7 JACK ST, INVERCARGILL
ZL4NP GOODIN, N H, 325 TOMAHAWK RD, DUNEDIN
ZL4NQ NZART QUEENSTOWN BRANCH 75 INC, C/O RUSS WATSON, PO BOX 2066, QUEENSTOWN
ZL4NR MCVIE, K R, 18 GRIGOR ST, DUNEDIN
ZL4NS HAGEN, R L, 1 - 23 TRAMWAY ROAD, STRATHERN, INVERCARGILL
ZL4NU MACKAY, A J, RD 9, OAMARU
ZL4NZ REID, K W, 1 BRACKEN COMMON, ROLLESTON 8004
ZL4OB BAIRD, O L, 131 NELSON ST, INVERCARGILL
ZL4OC SMITH, R F, 48 OATES ST, DUNEDIN
ZL4OCJ OLDROYD, J C H, C/O 82 VERNON TERRACE, ST MARTINS, CHRISTCHURCH
ZL4OD PARSONS, R D, 253 TALBOT STREET, INVERCARGILL
ZL4OE CUMMING, C T, 100 DOON ST, DUNEDIN
ZL4OI SIM, R J, RD 2, GORDON RD, MOSGIEL
ZL4OKY DOAK, N, 289 CHELMSFORD ST, ROSEDALE, INVERCARGILL
ZL4OL MCALEVEY, M J, RD2, WAITATI 9060
ZL4ON SUMMERELL, B W, 457 RACECOURSE RD, INVERCARGILL
ZL4OO NZART CENTRAL OTAGO BRANCH INC, C/- K Holdom, Po Box 7, Clyde 9180
ZL4OW VINCENT, S V, 30 CHARLES ST, WESTON
ZL4OX CHECKETTS, R N, 21 HIGHFIELD TCE, INVERCARGILL
ZL4OZ ADAMS, D A, 26 WILLS STREET, MORNINGTON, DUNEDIN
ZL4PA ARONSEN, P G, 10 GIRVEN ST, WALLACETOWN, INVERCARGILL
ZL4PB BROWN, P N, 25 BAXTER ST, BALCLUTHA
ZL4PC CROY, P R, 65 SHAW ST, MOSGIEL
ZL4PD NEILL, K G, 38 TEIGNMOUTH ST, GREEN ISLAND, DUNEDIN
ZL4PG LLOYD, D A, 180 FORBURY RD, DUNEDIN
ZL4PH HAYTON, P N, 17 ARAWA STREET, ANDERSONS BAY, DUNEDIN
ZL4PJ BLAIR, P J, 5 MERRIE CREEK RD, CLINTON 9252
ZL4PM MARSH, P, 33 FALCON ST, DUNEDIN
ZL4PN SKEET, B R, NO 1 R D, ALEXANDRA

ZL4PO PRICE, L J, 90 MALLING ROAD, RD 1, RICHMOND, NELSON
ZL4PP CAIRNS, J C, 35 ROYAL TCE, ALEXANDRA
ZL4PQ PRYDE, G W, 20B JELLICOE CRES, DUNEDIN
ZL4PR REAY, P, 27A LONG MELFORD ROAD, RIVERDALE, PALMERSTON NORTH
ZL4PT THOMPSON, K P, 180 MORNINGTON RD, DUNEDIN
ZL4PW ORMANDY, PAUL, 33 GRETA STREET, OAMARU
ZL4PX MCMILLAN, A D K, 33 BUSH ROAD, MOSGIIEL, DUNEDIN
ZL4PY BALL, G L, PO BOX 38, WAIMATE 8791, SOUTH CANTERBURY
ZL4PZ GILCHRIST, A J H, 20 SADDLEVIEW PLACE, FAIRFIELD, DUNEDIN
ZL4QA GRIEVE, L M, RD 1, KENNINGTON, INVERCARGILL
ZL4QC WALTON, A D, 132 MARTIN RD, FAIRFIELD, DUNEDIN
ZL4QD HAND, K A, 45 AOTEA ST, DUNEDIN
ZL4QE PEARCE, B H, 22 JOE BROWN AVE, MOSGIEL
ZL4QG NILSON, F E G, 19 DISTRICT RD, ROSENEATH, SAWYERS BAY
ZL4QH ADAMS, R J, 33 JAMESON AVE, ST ALBANS, CHRISTCHURCH
ZL4QI MCDIARMID, K G, PO BOX 131, OAMARU
ZL4QJ BURTENSHAW, J S, 33A GALLOWAY STREET, HAMILTON 2001
ZL4QK CROSS, A, 150 STATION RD, AYLESBURY RD 1, CHRISTCHURCH
ZL4QM MCLAREN, J B, 8 MARLBOROUGH CRESCENT, RICHMOND
ZL4QN BONNEY, J E, 195 QUEEN STREET, WAIMATE, SOUTH CANTERBURY
ZL4QO LAWSON, D, 30 MCFADDEN DRIVE, MOSGIEL
ZL4QQ MARSHALL, W H, 39 BELLONA STREET, ST KILDA, DUNEDIN
ZL4QS LOCHHEAD, J R, 14 DON PLACE, ALEXANDRA
ZL4QT DONOGHUE, A M, PO BOX 4215, WANGANUI
ZL4QU PIPER, R V, NO 2 R D, DRYSDALE RD, INVERCARGILL
ZL4QW DANIEL LEWIS, 314 THAMES HIGHWAY, OAMARU
ZL4QY MCLEAN, I A, C/O NZMCA MAIL DROP, P O BOX 72 147 PAPAKURA, AUCKLAND
ZL4RAE RAE, B G, 25 ETTRICK ST, BROCKVILLE, DUNEDIN
ZL4RAY PARRIS, R C, 57 RATA DRIVE, OTEMATATA
ZL4RB NAISH, A W, 45 ARDGOWN RD, OAMARU
ZL4RC CHAPMAN, R C, 17 CUBA STREET, CARLTON HILL, DUNEDIN 9001
ZL4RD PERRIN, L D, 69A OTIPUA RD, TIMARU
ZL4RE EAST, R S, 503 SILVERSTREAM VALLEY ROAD, RD2, MOSGIEL
ZL4RF OSBORNE, H F, 8 CONWAY CRES, INVERCARGILL
ZL4RG CALVERT, K C, 183 DRYSDALE ROAD, MYROSS BUSH, NO 2 RD, INVERCARGILL
ZL4RH MCINTOSH, R W, 51 YOUNG STREET, DUNEDIN 9001
ZL4RJ BABER, L, PO BOX 12-665, THORNDON, WELLINGTON
ZL4RM WIJKSTRA, E, 28 WHITE ST, INVERCARGILL
ZL4RMF FALCONER, R M, 421 DONALD ROAD, NO 5 R D, GORE
ZL4RML MUELLER, R, PO BOX 6555, DUNEDIN
ZL4RO GRAHAM, J D, 30 GRANTS ROAD, TIMARU
ZL4RP GILLIONS, R M, 5 CHERRY DRIVE, MOSGIEL, DUNEDIN 9007
ZL4RQ PYCROFT, B E, 8 ORCADES ST, SHIRLEY, CHRISTCHURCH
ZL4RR Donnelly, David, 40 Brookwood Rd, Bethany, Connecticut
ZL4RS JONKER, J A, 148A ELGIN ROAD, MORNINGTON, DUNEDIN 8751
ZL4RT SMITH, D J, 181 MILTON STREET, NELSON
ZL4RU POWE, R L, PO BOX 26, PALMERSTON
ZL4RUS EADE, R W, 27 GRAHAM STREET, MOSGIEL
ZL4RV TAMPLIN, A F K, 88 MAHOENUI VALLEY RD, R D 3 COATESVILLE, ALBANY AUCKLAND
ZL4RW BAILEY, W D, 35 TYNE STREET, ROSLYN, DUNEDIN
ZL4RXD GRIFFITH, ROYCE, EN HAKKORE, RD4, RANFURLY, CENTRAL OTAGO
ZL4SA HELM, P D, RD 4, RANFURLY
ZL4SB STEVENSON, D J, P O BOX 9008, DUNEDIN 9030
ZL4SC EMERSON, M P, 41 EMBO ST, KEW, DUNEDIN
ZL4SD EXCELL, R A, PO BOX 7, TE ANAU
ZL4SE BRANNIGAN, A M, 2 COLLINS STREET, ASHBURTON
ZL4SEA ROLTON, G L, 59 BALMAIN AVE, HALFWAY BUSH, DUNEDIN
ZL4SF WATT, B F, 91 WESTON RD, OAMARU
ZL4SJ JEPSON, S J,
ZL4SL POPE, K, 160 HOWICK ROAD, BLENHEIM
ZL4SM FINER, W R, 7 SWANSON RD, HENDERSON, AUCKLAND 1008
ZL4SN MCLEOD, N C, 65 STUART ST, OAMARU
ZL4SO ELLIS, K M, 3 HAWERA RD, KOHIMARAMA
ZL4SQ LEADLEY, A M, 33 TAWARAU RD, RD 1, PIOPIO 2555
ZL4SR FLETCHER, R E, 19 RIVERSIDE DRIVE SOUTH, LOWER HUTT
ZL4SS JURY, L S, 24 PAEROA ROAD, R D 12, LEVIN
ZL4ST BEVERIDGE, G W, 83 RUSSELL ST, ALEXANDRA
ZL4SU MURRELL, I G, 8 AWAKINO ROAD, TE KUITI
ZL4SV HAYTER, J W, 22 OMAPERE RD, KAIKOHE
ZL4TA MILLAR, G E, 18A ARUN ST, OAMARU
ZL4TAC PARISH, D A, 25 TRUSCOT AVE, WELLINGTON
ZL4TAD MCKENZIE, A D, MARSHALL RD, KAPUKA SOUTH, RD 5, INVERCARGILL
ZL4TAE THOMAS, T M, 105 LARNACH RD, DUNEDIN
ZL4TAF BAYLISS, A, 13 LINDIS CRESCENT, OTEMATATA 8950
ZL4TAI CALDER, A D, FERNHILL, ARDGOWAN, 1-D RD, OAMARU
ZL4TAJ PATERSON, E G, 77 THOMPSON ST, QUEENSTOWN
ZL4TAO REYNOLDS, A W, 124 DASHER ROAD, 13 D R D, OAMARU
ZL4TAQ HOWELL, A D, 18 BEVERLEY ST, MERIVALE, CHRISTCHURCH 1
ZL4TAR KIRKBY, K J, 5 LESNEY ST, MARYHILL, DUNEDIN
ZL4TAY McCarty, Christopher, 33 Kelvin Road, North East Valley, Dunedin
ZL4TAZ WADE, R B, 8 HARBOUR HEIGHTS, WAVERLEY, DUNEDIN
ZL4TBR CLEAVER, R A J, 26 WALBROOK CRESCENT, OAMARU
ZL4TCA GRIFFITH, I W, 17 GILMORE ST, DUNEDIN
ZL4TCB WALKER, B A, RD 1, GOODWOOD RD, PALMERSTON
ZL4TCC LE QUESNE, P W H, 23 ORIEL PLACE, PIRIMAI, NAPIER
ZL4TCF NORGROVE, T J, 9 DAKOTA PLACE, WALDRONVILLE
ZL4TCN HOLLEY, J A C, 44 SCOTLAND ST, ROXBURGH 9156
ZL4TCO MOONEY, W J, 43 Main Street, Weston, Oamaru
ZL4TCS FALCONER, E F, PO BOX 214, GORE
ZL4TDB WILDEN, J H, 46 HOCKEN ST, DUNEDIN
ZL4TDE GALLAGHER, P R, 112 JOHN SIMS DRIVE, JOHNSONVILLE, WELLINGTON
ZL4TDF WALKER, J D, 7 MEON ST, OAMARU
ZL4TDG GALLAGHER, S A, 26 JOSEPH ST, INVERCARGILL
ZL4TDJ DINGWALL, A B, 47 GILKISON ST, DUNEDIN
ZL4TDK DWYER, W A, 21 SUMMERTIME AVE, DUNEDIN
ZL4TDM MCKEOWN, D W, 61 EDEN ST, OAMARU
ZL4TDQ DAVIDSON, R W, 48 MONTROSE ST, INVERCARGILL
ZL4TDR ZOEST, A R, 25 JAUNPUR CRES, BROADMEADOWS, WELLINGTON
ZL4TDS KING, W A, P O BOX 410, ALEXANDRA
ZL4TDT JOHNSON, W A, FLAT 10, 254 MAIN STREET, GORE
ZL4TDU LYNN, I G, 1/37 AVONHEAD RD, AVONHEAD, CHRISTCHURCH
ZL4TFD BALL, D R, 2C TOWEY ST, OAMARU
ZL4TFF BOKSER, D L, 216 NORTH RD, NORTH EAST VALLEY, DUNEDIN
ZL4TFG NEILL, P G, 593 MACRAES ROAD, 3 RD, PALMERSTON, OTAGO
ZL4TFL COLLIER, J B, 86 MAILER ST, DUNEDIN
ZL4TFM MCKENZIE, F M, 33 AILSA STREET, WALLACETOWN
ZL4TFP BEDFORD, W M, C/O MILBURN GARDENS RD 2, MILTON
ZL4TFV CALDER, D G, PO BOX 113, WINTON 9662
ZL4TFY CRAIGHEAD, G, 162 BALMACEWEN RD, DUNEDIN
ZL4TGA SCOTT, P R, 99 GILKISON ST, DUNEDIN
ZL4TGB GRANT, W A, PO BOX 375, DUNEDIN
ZL4TGF WILLIAMS, G B, 64 FORFAR CRES, INVERCARGILL
ZL4TGH CONNOLLY, R C, PO BOX 1229, DUNEDIN
ZL4TGJ PETTIGREW, A D, 89 WARD STREET, INVERCARGILL
ZL4TGM BLACK, W A, WEST COAST ROAD, R D 1, AWANUI 0552
ZL4TGP WATSON, R M, 21 ARCUS ST, WHANGAREI
ZL4TGQ ANDREWS, BRIAN, 14 COMO STREET, MAORI HILL, DUNEDIN
ZL4TGT GERRIE, A L, 22 MARHILL TERRACE, MORNINGTON, DUNEDIN
ZL4TGW WRIGHT, G W,
ZL4TH LARSEN, S N, 26 COLUMBA AVE, LOOKOUT POINT, DUNEDIN
ZL4THE BOOTH, A W, P O BOX 77, STEWART ISLAND
ZL4THF BURGE, G G, 34 COLMAR RD, MELLONS BAY, HOWICK AUCKLAND 1705
ZL4THG MCAULIFFE, K J, P O BOX 56, KINGSTON 9660
ZL4THJ RABBIDGE, M J, CRAYBURN FARM, GRAHAM RD, RD 1, TOKANUI
ZL4THN HANNAH, I R,
ZL4THP DA-RIN, K J V, 141 FORBURY ROAD, ST CLAIR, DUNEDIN
ZL4THQ CRIMP, G R, 31 DAVIES RD, NEW PLYMOUTH
ZL4THT BLEE, A R, 7 CAMPBELL ST, ALEXANDRA
ZL4THZ MCLEAN, C J, RD 1, LONGBUSH, INVERCARGILL
ZL4TID MCRAE, G F, 1 HILLCREST AVE, MATAURA 9690
ZL4TIE BARBER, B J, RD 2, GLENCOE, INVERCARGILL
ZL4TIG HILL, A R M, 16 WYRE ST, KAITANGATA
ZL4TII PEIRSON, W E, 16 GARDINERS ROAD, BISHOPDALE, CHRISTCHURCH
ZL4TIK CURLINE, A J, 16 DERBY ST, GREEN ISLAND
ZL4TIL DRAGE, I J, C/O 12 GREY STREET, INVERCARGILL 9501
ZL4TIM WATSON, N R, 27 READING STREET, CHRISTCHURCH 4
ZL4TIO MOORE, J S, 10 DALRYMPLE ST, DUNEDIN
ZL4TIR WOODROW, P J, 32 BAKER ST, STIRLING 9200
ZL4TIY LAROOY, G M, 85 RIVERLEA ESTATES DRIVE, RIVERLEA ESTATES, BELFAST, CHRISTCHURCH
ZL4TJP ASKIN, F A, 408 HAREWOOD, BISHOPDALE, CHRISTCHURCH
ZL4TJR TAYLOR, J F,
ZL4TKK SPENCE, R W, 41 BLACK RD, OTATRA RD 9, INVERCARGILL
ZL4TKM MITCHELL, GLENN, 17 KAKA ROAD, ST. LEONARDS, DUNEDIN
ZL4TKQ TAMPLIN, N L A, 58 COOPER ST, KARORI, WELLINGTON

ZL4TKR TAYLOR, G J,
ZL4TKS MASON, E C, 49 JOHN ST, RANFURLY 9171
ZL4TL BLAIR, R C, TAUMATA R D, CLINTON, DUNEDIN
ZL4TLE ELLIOTT, L G, 36A MURANO ST, DUNEDIN
ZL4TLG MCCONECHY, G S, 71 HEYWOOD ST, INVERCARGILL
ZL4TM DUFFY, W J, PO BOX 6025, INVERCARGILL
ZL4TNT GRABOWSKI, B M, 4 PATUTU GROVE, TRENTHAM, UPPER HUTT 6007
ZL4TO MANN, I A, 245 Macandrew Road, Saint Clair, DUNEDIN
ZL4TP GARRY, A M, 4 TILBURN ST, DUNEDIN
ZL4TPD DENNISON, W P, 301 YTHAN ST, INVERCARGILL
ZL4TPJ DIXON, P J,
ZL4TR ARMSTRONG, E W, 15 LONDON STREET, WESTON, OAMARU 8901
ZL4TRM MCLENNAN, R N, 161 HALL ROAD, SAWYERS BAY, DUNEDIN
ZL4TRS SHEAT, R A, MCLEW ST, KENNINGTON RD 1, INVERCARGILL
ZL4TRW CODLING, R D, 11A SEDDON ST, TIMARU
ZL4TS SMITH, J W, C/- DAVID PEARSON, P O BOX 1312 GREEN ISLAND, DUNEDIN
ZL4TSM MANN, S P, 20 MARKHAM WAY, ROLLESTON
ZL4TSR FORRESTER, S R, 43 THURSO ST, INVERCARGILL
ZL4TT CARTER, F L, 4 ROACH STREET, OAMARU
ZL4TUD MCCONNACHIE, N E, P O BOX 13146, GREEN ISLAND, DUNEDIN
ZL4TUI RICHARDSON, M, 196 HILL ROAD, BELMONT HILLS, WELLINGTON 6009
ZL4TUX BARKMAN, G P, 31ASCOT STREET, ST KILDA, DUNEDIN
ZL4TWO CLARKSON, D J, 22 JACKSON ST, DUNEDIN
ZL4TX STUART, B E, 353 HIGHCLIFF RD, DUNEDIN
ZL4UDM MCKENZIE, D S, 33 AILSA STREET, WALLACETOWN, INVERCARGILL
ZL4UHF ALDRIDGE, S J, RD 4, UNDERWOOD, INVERCARGILL
ZL4UJC CUNNINGHAM, J C, 11 SANDOWN STREET, WAIHOLA, SOUTH OTAGO
ZL4UK JONES, J B, 2 DUDLEY PLACE, MAORI HILL, DUNEDIN
ZL4UPB JONES, UNIVERSITY OF AUCKLAND, PRIVATE BAG 72019, AUCKLAND
ZL4US LAMBERT, M G, 38 AYR ST, MOSGIEL
ZL4VAB WILDEN, R M, 46 HOCKEN ST, KENMURE, DUNEDIN
ZL4VAC BOOTSMA, D, 8 SELWYN ST, OAMARU
ZL4VAD MEIKLE, J W, 15 GIRVAN ST, OAMARU
ZL4VAP POPHAM, A D, 47 KELSO CRES, INVERCARGILL
ZL4VAQ NEEDHAM, J W, 2/232 SPEY STREET, INVERCARGILL
ZL4VCS STEPHEN, C D, 53 ANTIMONY CRES, CROMWELL
ZL4VDF FINDLATER, D N, 41 MONTAGUE ST, DUNEDIN
ZL4VDM MILLER, D R, 34 HERRON ST, BROCKVILLE, DUNEDIN
ZL4VEH HUNT, E J, 691 PORTOBELLO RD, BROAD BAY, DUNEDIN
ZL4VGA ANDERSON, R G, 121 ELGIN RD, MORNINGTON, DUNEDIN
ZL4VGV SEIDELIN, G R, 45 ELGIN ROAD, MORNINGTON, DUNEDIN
ZL4VJS SHAND, J C, 34 BAYVIEW ROAD, WOODEND RD1, INVERCARGILL
ZL4VK RUSHBY, C H, P.O BOX 531, DUNEDIN
ZL4VM MARRIS, V T, 7 MERIDIAN ST, PORT CHALMERS
ZL4VOW WATSON, O, 103 BRAEVIEW CRES, DUNEDIN
ZL4VPM MORTIMER, V P, 18 ASH STREET, OAMARU
ZL4VW WILLIAMS, V R, 22 SWORD STREET, GORE
ZL4WA SCOTT, J R, COCHRANES RD, RD 7, ASHBURTON 8300
ZL4WAH WATSON, A H, 114 CANNINGTON RD, DUNEDIN
ZL4WAQ JAQUIERY, S G, 56 ROYAL TCE, DUNEDIN
ZL4WAT WRIGHT, A T, 5 PALMER ST, SEACLIFF, RD 1, WAIKOUAITI
ZL4WC WISHART, I D,
ZL4WD WALLACE, W D, C/O PO BOX 75, WAIPARA PC 8270
ZL4WDF FRASER, D R A,
ZL4WEK KROL, E, 23 FRANKLIN ST, DUNEDIN
ZL4WES WESTON, A N, 3 KAURI ST, RICCARTON, CHRISTCHURCH
ZL4WF BEYER, W F T, 132 EDEN ST, OAMARU
ZL4WG SMITH, J, 1014 GREENVALE ROAD, NO 5 RD, GORE
ZL4WJ BUSBY, W J, 25 ETTRICK ST, BROCKVILLE, DUNEDIN
ZL4WRC CLARK, R W, 5 LETHABY ST, ABBOTSFORD, DUNEDIN
ZL4WW CARTER-O'BRIEN, H, C/O KDXA, PO BOX 7, CLYDE, CENTRAL OTAGO
ZL4WX HOLLAND, B J, C/O POLICE STATION, 32 PRINCES ST, WAIKARI 8276
ZL4WZ HOLLAND, J P, 3 OKIWA PLACE, RD 1, PICTON

NEW ZEALAND DEPENDENCIES

ZL6A NEW ZEALAND ASSOCIATION OF RADIO TRANSMITTERS INC, PO BOX 40-525, UPPER HUTT 6415
ZL6FF FISTS CLUB - NZ CHAPTER, C/- 12C / 186 THE TERRACE, WELLINGTON 6001
ZL6IW NEW ZEALAND ASSOCIATION OF RADIO TRANSMITTERS INC, PO BOX 40-525, UPPER HUTT 6415
ZL6KCM KAPITI COAST MUSEUM WAIKANAE INC, 9 ELIZABETH STREET, WAIKANAE 6010
ZL6LH KARRASCH, D F, 24 BROOKE RD, PAPAKURA, AUCKLAND
ZL6LHW UPPER HUTT BRANCH NZART INC, C/- 35 MATAI ROAD, RAUMATI SOUTH 6010
ZL6OTC NEW ZEALAND OLD TIMERS CLUB (ZL), 25 ANNANDALE STREET, NEW PLYMOUTH
ZL6QH WELLINGTON AMATEUR RADIO CLUB INC, NZ ASSOCIATION OF RADIO TRANSMITTERS, P O BOX 40525, UPPER HUTT
ZL6SAT AMSAT-ZL, C/- NZART, PO BOX 40-525, UPPER HUTT
ZL6YL NZ WOMEN AMATEUR RADIO OPERATORS, C/O MRS JN O'DONNELL, 39 LISMORE ST, NEW PLYMOUTH
ZL7TK KAMANA, T, P O BOX 16, WAITANGI, CHATHAM ISLANDS
ZL8R Microlite Penguins DXpedition Team, C/- Chris Hannagan, Fraters Rd, RD 1
ZM2E WELLINGTON AMATEUR RADIO CLUB INC, NZ ASSOCIATION OF RADIO TRANSMITTERS, P O BOX 40525, UPPER HUTT

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Young-Soon Park, HL1IFM, 8 Samsun-Dong 3-KA, Sungbuk-ku, Seoul

SOUTH PACIFIC AMATEUR RADIO LISTINGS

Fiji

3D2AA Aisake, A., P.O. Box 4969, Lautoka, Fiji.
3D2AG de Ramon, A., P.O. Box 14-633, Suva.
3D2BA Best, H. J., P.O. Box 698, Sigatoka.
3D2CC Carter, T. F., Muscat Cove Resort.
3D2CM Northcott, R. L., P.O. Box 1168, Suva.
3D2CS Broadbridge, E. K., P.O. Box 1046, Suva.
3D2DG Goodger, James, P.O. Box 11-407, Suva.
3D2DI Smith, W. J., P.O. Box 184, Suva.
3D2DN Lucas, David, P.O. Box 283, Pacific Harbour.
3D2ER Singh, Raj, P.O. Box 184, Suva.
3D2ES Saphore, Edward, P.O. Box 12-758, Suva.
3D2JO Turaganivalu, J., 14 Alexander Street, Suva.
3D2KM MacKinnon, K., c/- F.S.C, P.O.Box 63, Lautoka.
3D2LD Damuni, Savenca, P.O. Box 90, Suva.
3D2MP Prakash, M., P.O. Box 5324, Raiwaqa.
3D2PS Schulz, A. F. P., P.O. Box 5372, Raiwaqa.
3D2SS First Suva Scout Group, P.O. Box 2344, Government Buildings, Suva.
3D2UR USP Amateur Radio Club, P.O.Box 1168, Suva.
3D2YL Blisard, Karen S., P.O. Box 2474, Suva.

Cook Islands

E51AQ Malcolm, Roger, PO Box 7, Areora, Atiu Island.
E51BK Allan, Norman, Titikaveka, Rarotonga.
E51BS C Is. Boy Scouts, PO Box 491, Rarotonga.
E51CG Rivera, Victor, PO Box 618, Black Rock, Rarotonga.
E51DD Clarke, Des, Aitutaki Island, South Cook Islands.
E51DG Goodger, James, PO Box 597, Rarotonga.
E51JD Ditchburn, Jim, PO Box 491, Rarotonga.
E51KH Holdom, Ken, c/- ZL4HU, P O Box 7, Clyde, Central Otago 9180, New Zealand, zl2hu@clear.net.nz.
E51TW Wichman, Tomoavao, PO Box 129, Rarotonga.
E51USA Rivera, Victor, PO Box 618, Rarotonga.
E51WL Latham, Warwick, Omoka, Penrhyn Island.

New Caledonia

FK1RO Szymanski, Pascal, Box 11-451, 98802, Noumea.
FK1TK Rainer, Henri, 190 rue Boutmy, Box 4608, 98847, Noumea.
FK1TV Flotat, Leon, Box 3690, 98846, Noumea.
FK1UB Morignat, Claude, 64 Route Anse-Vata, 98800, Noumea.
FK1UL Jauneau, Jean-Claude, Box 2100, Pont des Francais, 98810, Mont Dore.
FK1UM Janisel, Robert, Box 917, 98830, Koutio.
FK1UW Tardivel, Gouvlen, 1 rue Henry Boissery, Box 1529, 98845, Noumea.
FK8AH Garbe, Robert, Box 4490, 98847, Noumea.
FK8AL Garbe, Jean, Box 3994, 98846, Noumea.
FK8BG Cullell, Gilbert, 6 bis rue Charbonneaux, 98800, Noumea.
FK8BN Thiriet, Guy, Box 1491, 98845, Noumea.
FK8BR Ynet-Mine, Maurice, 98825, Pouembout.
FK8CA Gouillard, Alain, Box 238, 98840, Tontouta.
FK8CC Deramane, Simon, Box 7514, 98801, Noumea.
FK8CP Touzard, Remi, Box 945, 98845, Noumea.
FK8DD Torope, Samuel, Box 3040, 98846, Noumea.
FK8DI Rabu, Dominique, 5 rue C. Savoie, 98800, Noumea.
FK8DJ Kryger, Jean-Claude, 21 rue Charbonneau, 98800, Noumea.
FK8DL Roussel, Jean-Claude, Box 8585, 98807, Noumea.
FK8DM Thouvay, Gilles, Box 2016, 98846, Noumea.
FK8EB Pesnel, Henri, Box 9754, 98807, Noumea.
FK8EF Martin, Arsene, Box 3519, 98846, Noumea.
FK8ET Dufermon, Jean-Michel, Box 3859, 98846, Noumea.
FK8FA Tuband, Aimee, via VK4CTA.
FK8FB Debien, Lionel, Box 428, 98845, Noumea.
FK8FC Tourette, Michel, Box 2309, 98846, Noumea.
FK8FG Lepelletier, Bernard, Box 6258, 98806, Noumea.
FK8FI Nagle, Alain, QSL to F6FNU.
FK8FK Torregrosa, Jean-Philippe, Box 8485, 98807, Noumea.
FK8FL Gazengel, Albert, Box 4561, 98847, Noumea.
FK8FO Chanaron, Jean-Paul, Box 7133, 98801, Noumea.
FK8FR Nixon, John, Box 2319, 98846, Noumea.
FK8FS Todori, Georges, 47 rue du Dr. Drayton, 98800, Riviere Salee.
FK8FX Mercier, Yvon, 16 rue Gal Sarrail, 98800, Noumea.
FK8FZ Blanchet, Yves, Box 11490, 98802, Noumea.
FK8GF Millot, Alexandre, Box 3977, 98846, Noumea.
FK8GJ Bourez, Marc, only QSL to F6CXJ.
FK8GM Esposito, Eric, Box 4480, Noumea, 98847, or via WB2RAJ.
FK8GN Allegret, Alain, Box 133, 98850, Koumac.
FK8GO Kherzi, Michel, via VK4CKM.
FK8GT Debien, Philippe, Box 8340, 98807, Noumea SUD.
FK8GU Marrades, Jacques, Box 3528, 98846, Noumea.
FK8GW Enrico, James, Box 6008, 98806, Riviere Salee.
FK8GX Mahault, Michel, Box 955, 98870, Bourail.
FK8GY Bouleau, Joel, Box 7219, 98801, Noumea.
FK8GZ Gaveau, Emile, Box 2005, 98846, Noumea.
FK8HA Lefebvre, Patrice, Box 74, 98830, Dumbea.
FK8HC Petitjean, Franck, only via VK4FW.
FK8HF Pebellier, Michel, 12 bis Rue Bureau V D C, 98800, Noumea.
FK8HG Tual, Robert, Box 9053, 98807, Noumea.
FK8HH Roussel, Odile, Box 8585, 98807, Noumea.
FK8HM Pesque, Eric, 20 rue de la Riviere, Pointe aux Longs cous, 98800, Noumea.
FK8HN Lavisse, Didier, Box KO 1412, 98830, Dumbea.
FK8HP Hertzog, Pascal, Box 6005, Riviere Salee 1, 98806, Noumea.
FK8HQ Said, Eric, 12 bis rue E Mercier Vdc, 98800, Noumea.
FK8HS Rieux, Christine, Box 7325, 98801, Noumea.
FK8HW Poitvin, Thibault, only via VK4FW.
FK8HZ Bunel, Maurice, 6 Rue Barleux, 98800, Noumea.
FK8KAB A.R.A.N.C., Box 3956, 98846, Noumea.
FK8KBS A.R.A.N.C. BBS, Box 3956, 98846, Noumea.
FK8KRU A.R.A.N.C., Box 3956, 98846, Noumea.
FK8PCT ATRASEC, Box 2793, 98846, Noumea.
FK8ZHA Repeater, Box 3956, 98846, Noumea.
FK8ZHB Repeater, Box 3956, 98846, Noumea.

Solomon Islands

No update for 2006
H44GP Pearson, G., P.O. Box 292, Honiara.
H44GR Richardson, G., P.O. Box 127, Honiara.
H44MS Steffen, B., see DL2GAC.
H44NC Caisson, N., P O Box 168, Munoa.
H44PT Taylor, P, see G8BCG.
H44SI Solomon Island Radio Society, P.O. Box 418, Honiara.
H44XJA Ashley, J., P.O. Box 986, Honiara.

NON-TRANSMITTING MEMBERS

Bell, D, P O Box 43, Otaki 5560.
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Byers, R W, 95 Denton Road, R D 1, Levin 5500.
Conway, C, Caseys Road, R D, Seddon 7353.
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Dickie, R A, 14 Koa Street, Gore 9700.
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Gough-Jones, A, 24 Bidwell Place, Hillmorton, Christchurch 8003.
Gray, R G, Paierau Road, R D 1, Masterton 5921.
Lambert, R E, 15 Wither Road, Blenheim 7301.
Lennox, A E, 33 Greendale Road, Darfield 8172.
Low, S K, P O Box 112-167, Penrose, Auckland 1135.
McConnel, S J (Mrs), 66 Khandallah Road, Khandallah, Wellington 6004.
McGehan, M C, 80 Nelson Street, Howick, Auckland 2014.
McKenzie, C G, 253 Ohiro Road, Brooklyn, Wellington 6002.
McNeil, D A, 33 Eivers Road, Whakatane 3080.
McNickle, R, 1 Moana Avenue, R D, Atiamuri 3291.
Midwinter, G G, 6 Crabapple Close, Milson, Palmerston North 5301.
Morris, Tom, 316/1 Budden Road, R D 5, Te Awamutu 2400.
Murdoch, T, 5 Karaka Street, Otaki Beach 5560.
Parsons, C, 54 Wiloughby Street, Paeroa 2651.
Pritchard, H R, 1-67 Gribblehirst Road, Sandringham, Auckland 1003.
Renner, D M, 118 Te Haumi Road, Paihia, Bay of Islands 0252.
Sebire, R W, 32 Neri Crescent, Rotorua 3201.
Strachan, J W, 47 Morgans Road, Glenwood, Timaru 8601.
Thomson, B D, ZL149, 14 Puriri Street, Kamo 0101.
Walker, J, 32 Argentine Avenue, Miramar, Wellington 6003.
Webb, W R C, 13 Rembrandt Avenue, Linden 6006.
Wiggins, F G, ZL1306, P O Box 522, Tokoroa 2392.

AREC OFFICERS 2006

AREC Officers

E.Call			Call	Home	Work	Deputy	Call	Home	Work
ZK6EX	**National Director**	Jeff Sayer	ZL4JS	(06) 370-1245	(027-450-8022	Geoff Chapman	ZL3PX	(03) 942-8180	(03) 377-8324
ZK6EXS	**National Secretary**	Doug Cooke	ZL1TTE	(09) 846-6075	(025) 978-121				
ZK1EX	**Area ManagerZL1**	Richard Gamble	ZL1BNQ	(09) 537-1238	(09) 272-0114	Jim Rowe	ZL1AVR	(07) 868-9193	(027) 235-7266
ZK2EX	**Area ManagerZL2**	Terry Waghorn	ZL2AYY	(06) 306-8926	(027) 488-7271	John Yaldwyn	ZL4JY	(04)293-1400	(04) 498-7080
ZK3EX	**Area ManagerZL3**	Gareth Bradshaw	ZL3VP	(03) 332-2406	(027) 432-4738	Paul Rennie	ZL2RE	(03) 578-5311	(03) 577-7007
ZK4EX	**Area ManagerZL4**	Bill Olsen	ZL4AE	(03) 455-7884	(027) 436-9107				
ZK6EX	**Land SAR Liason**	Jeff Sayer	ZL4JS	(06) 370-1245	(027) 450-8022				
ZK6EXT	**Nat.Training Officer**	Daniel Ayers	ZL1DFA		(021) 387-334				

AREC Section Leaders and Deputies

E.Call	Section	Section Leader	Call	Home	Work	Deputy Leader	Call	Home	Work
ZK1EA*	Auckland	Graham Hay	ZL1GH	(09) 278-8392	(021) 384-150	Don Webster	ZL1CY	(09) 575-5554	
ZK1EB*	North Shore	TBA				Alan Wooller	ZL1AUW	(09) 444-2423	(09) 309-1390
ZK1EC	Hamilton	Jim Medland	ZL1UCT	(07) 846-7415	(027) 359-4798	Bevan Holden	ZL1BH	(07) 850-6335	
ZK1ED*	Te Awamutu	Chris Ellison	ZL1AKK	(07) 871-3733		Mervyn Owen	ZL2AVY	(07) 871-9992	
ZK1EE*	Taumarunui	Lew Palmer	ZL1TIG	(07) 895-8113	(07) 895- 8260	Trevor Hardisty	ZL1UTH	(07) 895-5924	(07) 896-7777
ZK1EF*	Waihi	David Bell	ZL1AKV			Peter Anderson	ZL1LR	(07) 863-7546	(07) 863-7546
ZK1EG	Northland	Brian Winger	ZL1BSW	(09) 438-8232	(027) 491-3888	Don Ewen	ZL1DTE	(09) 432-0185	(025) 974-356
ZK1EI	Thames	Jim Rowe	ZL1AVR	(07) 868-9193	(027) 235-7266	Mary Sutton	ZL1UHZ	(07) 868-7290	(021) 185-7250
ZK1EJ	Tauranga	Bill Richardson	ZL1APD	(07) 578-9317	(025) 687-1411	Don Spackman	ZL1MK	(07) 543-2730	(021) 066-3380
ZK1EK	Western Suburbs	Ross Reddell	ZL1VRR	(09) 629-0504	(027) 622-1055	Merv Thomas	ZL1SK	(09) 828-7174	(027) 499-0262
ZK1EL*	Cambridge	Tony Boyce	ZL1AFV	(07) 827-6107	(07) 827-7358	Des Hamblyn	ZL1HP	(07) 827-6247	
ZK1EM	Eastern B.O.P.	Alan McDonald	ZL1PI	(07) 308-7740	(07) 308-8967	Les Clark	ZL1BQX	(07) 308-8615	
ZK1EN	Franklin	Bob Holt	ZL1BBZ	(09) 235-9549	(027) 200-0331	Tom McDonald	ZL1TO	(09)238-8580	(09) 536 6239
ZK1EO	Kawerau	Barry Liddle	ZL1CAY	(07) 323-8970	(07) 323-3860	Ray Dyer	ZL1AIS	(07) 323-6199	
ZK1EP*	Waitomo	Mick Gannon	ZL1HJ	(07) 878-7140		Andrew Leadley	ZL4SQ	(07) 877-8675	
ZK1EQ	Rotorua	Peter Dare	ZL1PJ	(07) 345-6469	(07) 343-5883	Murray Thompson	ZL1SY	(07) 348-9741	
ZK1ER*	Tokoroa	Graham Henley	ZL1GDH	(07) 886-6498	(07) 886-1746	Brian Williamson	ZL1BYO	(07) 886-5658	(07) 886-6109
ZK1ES	Papakura	Richard Gamble	ZL1BNQ	(09) 537-1238	(09) 272-0114	David Karrasch	ZL1DK	(09) 298-5271	(09) 266-0180
ZK1ET*	Taupo	Graham Messenger	ZL1BVO	(07) 378-4162		Roger Simmonds	ZL1UT	(07) 378-9676	
ZK1EU	Manukau	Ivan Lindsay	ZL1AMR	(09) 272-8295		Granville Emmett	ZL1BYD	(09) 273-2673	
ZK1EV*	Te Puke	John Hutton	ZL2GV	(07) 542-1159	027 493-5170	Ray Brown	ZL1RAB	(07) 573-8511	
ZK1EW	Rodney	Mike Ryan	ZL2MR	(09) 425-4401	(027) 213-4929				
ZK1EY*	Opotiki	Jim Jones	ZL1JRJ	(07) 315-7067		Steve Winder	ZL1ACE	(07) 315-7333	
ZK6EA	Far North	Russell Shackleton	ZL1BQK	(09) 408-0057	(09) 408-0190	Eric Shackleton	ZL1TGQ	(09) 408-4125	(09) 408-0404
ZK6EB*	Te Aroha	Kevin Morton	ZL1TEA	(027) 285-8175		Jim Milligan	ZL1BAM	(07) 884-8660	
ZK6EC*	Hibiscus Coast	Darryl Nielsen	ZL1TCH	(09) 402-5075		John Bell	ZL1FB	(09) 424-5725	(025) 675-5327
ZK6ED*	Mercury Bay	Geoff Penney	ZL1APO	(07) 866-4703	(07) 866-0035	Jack MacLardy	ZL1TIR	(07) 866-5876	
ZK6EE*	Auckland VHF Grp.	Daniel Ayers	ZL1DFA		(021) 387-334	Peter Loveridge	ZL1UKG	(09) 377-3398	
ZK2EA*	Gisborne	Alan Mackintosh	ZL2AOP	(06) 868-6267	(025) 234-8887	Steve Main	ZL2RI	(06) 867-0001	(06) 867-6544
ZK2EB	New Plymouth	Jill O'Donnell	ZL2DBO	(06) 758-1429		Wayne Gaudin	ZL2VN	(06) 753-5800	
ZK2EC	Motueka	Robin Reeve	ZL2FZ	(03) 528-6868	(021) 634-993	Jim Jackson	ZL2BCG	(03) 528-8357	
ZK2ED	Wanganui	Jason Wallace	ZL2FT	(06) 344-5687	(06) 345-0997	TBA			
ZK2EE*	Hastings	Robert Wallace	ZL2SG	(06)878-4993	(027) 434-4027	Warren Harris	ZL2AJ	(06)844-6880	(021) 649-284
ZK2EF	Kapiti	Len Blackley	ZL2GO	(04) 904-7048	(04) 496-2589	Geoff Cooke	ZL2TGC	(04) 293-2627	(04) 293-4003
ZK2EG	Wellington VHF	John Yaldwyn	ZL4JY	(04) 293-1400	(04) 498-7080	Jeff Sayer	ZL4JS	(06) 370-1245	(027) 450-8022
ZK2EH*	Tararua District	Steve Cooper	ZL2WAU	(06) 374-8288	(06) 376-4745	Jim Edwards	ZL1UBE	(06) 374-7261	(021) 156-2524
ZK2EI*	Manawatu	Hayden Sims	ZL2WD	(06) 357-8580		Len Inkpen	ZL2LI	(06) 357-1493	
ZK2EJ	Wairarapa	David Bray	ZL2UCW	(06) 378-8288	(027) 449-5146	Gavin McAnulty	ZL2VGB	(06) 377-3978	(027) 429-16105
ZK2EK*	Rahotu Coastal	Peter McNeil	ZL2QP	(06) 761-8028		Len Pentelow	ZL2OF	(06) 763-8489	
ZK2EL	Upper Hutt	Maurice Vile	ZL2ADP	(04) 976-9022		Neil Gibbons	ZL2TNG	(04) 527-9067	(04) 528-4558
ZK2EN*	Nelson	Dave Scott	ZL2BCA	(03) 545-0237	(027) 446-4714	Brian Hawken	ZL2BJ	(03) 547-0382	(021) 230-9592
ZK2EO	Marlborough	Paul Rennie	ZL2RE	(03) 578-5311	0800-250-450	Ron Harris	ZL2BDD	(03) 575-7181	(03) 575-7181
ZK2EP*	Inglewood	Tarry Martin	ZL2KV	(06) 756-7627		Graham Meads	ZL2TGM	(06) 756-7998	(06) 756-7194
ZK2EQ*	Napier	Mark Vidulich	ZL2LAB	(06) 844-2694	(06) 878-8109	John Lane	ZL2ARF	(06) 844-3266	(027)246-3977
ZK2ES	Horowhenua	Kenneth Ireland	ZL2KI	(025) 449-449	(025) 449-449	Arther Gregory	ZL2UIN	(06) 368-4336	
ZK2ET	Titahi Bay	Mike Burch	ZL2AUA	(04) 233-9038	(021) 188-0035	Chris Herd	ZL2TCH	(04) 239-9914	
ZK2EV*	Patea	Graeme Bateman	ZL2BHD	(06) 278-4793		Michael Mulholland	ZL2WJM	(06) 278-7583	
ZK2EW	Marton	Brian Purdie	ZL2ADL	(06) 329-3606	(027) 321-4470	Jim Vernon	ZL2BHX	(06) 388-1855	(025) 462-628
ZK2EY	Hutt Valley	Bob Sewell	ZL2ASO	(04) 564-6929		Dave Williams	ZL2DSW	(04) 564-6713	
ZK7EA*	Feilding	Gil Hitchman	ZL2BNA	(06) 323-5847		A. Abel	ZL2QR	(06) 323-6538	
ZK7EC*	Waitara	TBA				Ian Cash	ZL2BRA	(06) 754-6183	(06) 755-0900
ZK7ED*	Sth.Wairarapa	Neil Rait	ZL2BLM	(06) 308-9341	(025) 575-370	TBA			
ZK3EA	Christchurch	Dudley Berry	ZL3GG	(03) 389-4718	(03) 364-2102	Steve Davis	ZL2UCX	(03) 348-0360	(027) 436-1796
ZK3EB	Westland	Graham Hay	ZL3WMM	(03) 768-9499		Kevin O'Sullivan	ZL3ABY	(03) 768-7598	(03) 768-9300
ZK3EC	Sth.Canterbury	Glenn May	ZL3GL	(03) 686-0306	(03) 688-9073	David Hetherington	ZL3UDH	(03) 688-3619	
ZK3ED	Ashburton	Les Vincent	ZL3UX	(03) 303-6306	(025) 411-647	L Moller	ZL1VF	(03) 308-1007	
ZK3EE*	Sth.Westland	Ron Searle	ZL3MY	(03) 755-6741		TBA			
ZK3EF*	Reefton Buller	Kevin Croker	ZL3DAC	(03) 789-9875	(03) 789-7997	Jenny Croker	ZL3DYL	(03) 789-9875	
ZK3EG	Nth.Canterbury	Geoff Gillman	ZL3QR	(03) 313-7137	(027) 647-5490	Colin Rowe	ZL3COL	(03) 313-2303	(021) 257-9643
ZK3EH*	Kaikoura	Bill Jackson	ZL3PZ	(03) 319-5981		H. Bryant	ZL3GB	(03) 319-5897	
ZK4EA	Otago	Dave Stevenson	ZL4SB	(03) 454-2527	(03) 455-5440	Martin Balch	ZL4JH	(03) 454-3262	(027) 437-5242
ZK4EB	E. Southland	Alastair Allan	ZL4AO	(03) 208-7288	(027) 432-1914	Lindsay Eunson	ZL4LC	(03) 206-4587	(027) 432-5136
ZK4EC*	Southland	Neville Checketts	ZL4OX	(03) 216-6599	027 437-7431	Crosbie Stewart	ZL4CHS	(03) 216-3060	(027) 422-9788
ZK4ED*	Balclutha	John Blair	ZL4AM	(03) 415-7849	(025) 640-1227	Russell Bennett	ZL3GM	(03) 417-7411	
ZK4EE*	Centr.Otago	Russell Baird	ZL4DJ	(03) 448-9363		TBA			
ZK4EF*	North Otago	Neil McLeod	ZL4SN	(03) 434-7253		Gary Millar	ZL4TA	(03) 434-5993	(03) 434-5029
ZK4EG*	Queenstown	TBA				Dave Allison	ZL2TSI	(03) 442-5258	

AREC records have been updated from the National Database. Any additions or omissions to AREC Secretary, P.O. Box 44-132, Pt Chevalier, Auckland 1246.
*Inactive Section - Based on Activity Reports received by the AREC Secretary over a 18 month period. Correct as at May 19, 2006.

MONITORING SERVICE

Monitoring Service Co-ordinator
LEN MARTINSON
ZL1BYA

The IARU Monitoring System (MS) is world-wide. It came into being in August 1985 when a small group of IARU and monitoring people met in Geneva to devise a monitoring system to tie the three previously independent regional monitoring systems together. The IARU MS now comprises the three regional MS. In turn the regional MS are made up from the national societies' MS. The IARU MS defines a route by which the ordinary radio amateur in any country has a means of access to the international bodies in cases of harmful interference.

The present IARU MS is the culmination of many years work by a few dedicated amateurs. They have struggled on, often in the face of apathy and sometimes hostility. These few "Intruder Watchers" as they were called, had the support of a few far-seeing administrators in two or three societies and in the IARU who realised that the amateur bands were not a limitless resource and that we had to protect the frequencies allocated for our use.

With the increasing demands for spectrum space and the tendency of some administrations to ignore their responsibilities under the ITU convention, it is evident that the amateur service must have a strong and effective MS if it is to retain its frequency allocations and must present factual and authoritative information to these administrations when reporting cases of harmful interference.

Over the years a lot of very hard work, long hours and hard negotiations by a lot of very dedicated people world-wide, has gone into making the amateur service what it is today. It is our job, yours and mine, with no exceptions, to help keep it that way. One of the most important ways we can do this is to report any and all intruders into our exclusive bands. The longer we ignore them the harder it will be to remove them.

Do nothing and we will lose the right to use these bands.

Intruders

An intruder is any non-amateur radio transmission in the exclusive amateur bands. Some intruders reserve the right to use any frequency they like including the amateur bands—they are probably not members of the ITU or they just ignore the ITU regulations. Some do not know that they are causing harmful interference by spurious or harmonic radiation, and that is where the MS can help by bringing the problem to their notice.

Harmful interference

Interference which seriously degrades, obstructs or repeatedly interrupts a radiocommunication service operating in accordance with the Radio Regulations (from 2002 of the Nairobi Convention). In the work of the IARU MS this includes both out-of-band emissions and spurious emission, as defined below.

Out-of-band emissions

Emissions on a frequency or frequencies which are outside the necessary bandwidth which results from the modulation process, but excluding spurious emissions.

Spurious emissions

Emissions on a frequency or frequencies which are outside the necessary bandwidth and the level of which may be reduced without affecting the corresponding transmission of information. Spurious emissions include harmonic emissions, parasitic emissions, intermodulation products and frequency conversion products, but exclude out-of-band emissions.

Reporting

You can use a copy of the report from shown below or you can make your own, but it must show the following details.

Frequency to the nearest kHz if possible. See the table below to help you find the frequency.

Time—all times in MS reports are in UTC.

Date—this must also be UTC date.

Emission—see the table elsewhere in Call Book for emissions.

Identification—the call-sign or station identification if possible.

Remarks—these should include any traffic passed or text or length of transmission or how often transmission heard, etc.

There is an identification tape and booklet available on request.

Frequency measurement

Emission	Measure frequency at
A1A	Zero beat of carrier
A2A	Zero beat of carrier
A3A	Zero beat of carrier
A3C	Zero beat of main carrier
B9W	Centre frequency of emission
C3F	Centre frequency of emission
F1A	Centre frequency or halfway between the two carriers
F1B	Centre frequency or halfway between the two carriers
F3E	Resolution frequency of the modulation
F3C	Centre frequency of emission
F7B	Centre frequency of the four carriers
FXX	Centre frequency of emission
JAM	Centre frequency of emissions
J3E	Resolution frequency of the sideband
J8E	Resolution frequency of the two sidebands
N0N	Zero beat of carrier
P0N	Centre frequency of emission
R3E	Zero beat of carrier or centre of resolution
R7B	Centre frequency of emission

If you cannot determine the exact centre frequency put estimated or "Est." next to the reported frequency.

Reports should be sent to the co-ordinator monthly by e-mail, snail mail or telephone.

The NZART Monitoring Service relies heavily on your reports.

The NZART MS does not handle complaints by amateurs against other amateurs, that is for the National Society to deal with.

NZART Monitoring Service Co-ordinator
Len Martinson ZL1BYA
31 Riverside Drive
Waiuku 1852
Telephone: (09) 235-7712
E-mail: <MS@nzart.org.nz> **or** <lenmart@clear.net.nz>

NZART MONITORING SERVICE

REPORTER: _____

SUMMARY OF REPORTS FOR: _____

FREQUENCY	UTC	DATE	MODE	COMMENTS

Where do I fit in?

As a radio amateur, your NZART Membership is vital to all of us.

Amateur Radio is an activity requiring international co-ordination in radio frequency spectrum matters. This is achieved through several international organizations and your support is needed.

Membership of NZART acknowledges importance for the continuance of amateur radio in New Zealand, of representation by radio amateurs to government and liaison between NZART and overseas amateur radio societies.

ITU—the International Telecommunication Union

The ITU is a United Nations Agency and can be viewed as an assembly of government representatives. See the ITU web page at <www.itu.int>. New Zealand is a Member and the New Zealand Administration is the Ministry of Economic Development. The MED spectrum management web page is at <www.med.govt.nz/rsm>.

Through its International Radio Regulations, the ITU allocates radio services to specific frequency bands. Member states are required to recognize these treaty provisions when licensing services to operate on specific frequencies within their own regulations and national boundaries. The ITU Radio Regulations also define the Amateur Service and the Amateur Satellite Service and set down other operating requirements.

Frequency band allocations and the International Radio Regulations themselves are reviewed at ITU World Radiocommunication Conferences (WRC).

The New Zealand Radio Regulations reflect the International Radio Regulations.

The International Amateur Radio Union (IARU)

The IARU is a Sector Member of the ITU where it represents the Amateur Services. It is recognized by administrations as the appropriate body to make recommendations on amateur radio issues. The IARU is permitted to present papers for the information of ITU conferences.

The IARU is a worldwide voluntary federation of more than 150 amateur radio societies, founded in 1925. New Zealand joined in 1929. The prime purpose of the IARU is the protection of the Amateur and Amateur Satellite Services. The IARU Constitution is at the IARU web page: <www.iaru. org>.

The IARU is co-ordinated by an Administrative Council (AC) comprising a President, Vice-President, and two representatives from each of the three Regions:

Region 1 covers Europe, Russia and Africa,

Region 2 the Americas, and

Region 3 the remainder including New Zealand and Asia Pacific area.

One society provides the IARU Secretary and the IARU International Secretariat (IS) administrative services. Currently this is the American Radio Relay League (ARRL).

The business of IARU is transacted at triennial regional conferences arranged in sequence so that one is held each year. The IARU member-societies of the Region meet at these regional conferences to discuss common problems, to find solutions, to determine policy, and promote international amateur radio.

Each Region has its own IARU regional organization. NZART is a founder and active member of IARU Region 3. Founded in 1968, the IARU Region 3 Secretariat is in Tokyo. The affairs of the Region are attended to between conferences by Directors who are elected at the triennial conference.

NZART

Founded in 1926, NZART is the New Zealand society. The IARU Constitution recognizes only one member-society in each country. NZART is duty-bound to represent the interests of the Amateur and Amateur Satellite Services.

NZART is recognized by and makes representations to the New Zealand Administration, the Ministry of Economic Development, on behalf of itself and the IARU.

NZART also makes presentations to IARU Regional Conferences and can influence IARU policies.

IARU representatives at ITU conferences

The IARU is represented at ITU conferences by a selected team of specialists in amateur radio affairs drawn from IARU societies worldwide.

For some important ITU conferences, a representative of the Amateur Service is included in national delegations from Member countries. Where appropriate, NZART finances an Amateur Service representative in New Zealand's delegation. There was an NZART representative on the New Zealand Delegations to ITU conferences in 1979, 1982, 1997, 2003 and 2006.

The International Radio Regulations

A copy of the text of the regulations pertaining to Amateur Radio can be obtained on request from NZART Headquarters or from the "Study Guide" found at the NZART web page. A full copy of the Radio Regulations is available from the ITU Geneva but occupies several volumes. It is also available on CD-ROM, and is expensive.

The International Radio Regulations do not of themselves regulate radio amateurs. With the status of an international treaty, they set out what administrations are expected to impose by their own national regulations.

International challenges for amateur radio

All classes of radio service compete for their share of the radio frequency spectrum. Most services wield strong influence at ITU conferences. Decisions made there are affected by many factors, political, economic and social. At times the conference atmosphere is hostile to amateur radio.

Some decisions take many years to implement. The patient pursuit of long-term policies is needed to ensure the future welfare of the Amateur and Amateur Satellite Services.

The cost of this continuing vigilance is high. It comes from the radio amateurs in national societies and from the devoted voluntary efforts by many amateur radio specialists. A part of your NZART subscription is remitted to IARU Region 3 each year to help fund international activities.

Remember, there is no actual security for the Amateur or Amateur Satellite Service. Constant vigilance, with time and money to protect our regulatory provisions are needed.

Further information

Enquiries on international radio matters are welcome at NZART Headquarters.

See the IARU web site at <www.iaru.org> and the Region 3 web site at< www.jarlorg.jp/iaru-r3/>. Both can be accessed via <www.nzart.org.nz>.

IARU

Administrative Council

President: Larry E. Price W4RA

Vice-President: Tim Ellam VE6SH

Secretary: David Sumner K1ZZ

Region 1:

Chairman: Ole Garpestad LA2RR

Secretary: Don Beattie G3BJ

Region 2:

President: Rod Stafford W6ROD

Secretary: Reinaldo Leandro YV5AMH

Region 3:

Chairman: Michael Owen VK3KI, Australia

IARU International Secretariat

Address: PO Box 310905, Newington, CT 06131-0905, USA

Secretary: David Sumner K1ZZ

IARU Region 3

Secretary: Keigo Komuro JA1KAB. PO Box 73, Toshima, Tokyo 170-91, Japan

Chairman: Michael Owen VK3KI, Australia

Directors:
Professor Rhee-Joong Guen HL1AQQ, Korea
Shizuo Endo JE1MUI, Japan
Gopal Madhavan VU2GMN, India
Peter Lake ZL2AZ, New Zealand

Monitoring System Co-ordinators:

International: Position vacant

Region 1: Wolf Hadel DK2OM

Region 2: Bill Zellers WA4KFI

Region 3: Arasu Manohar VU2UR

Beacon Project Co-ordinators

IARU Beacon Project: Bob Fabry N6EK

Region 3: Peter Norden ZL2SJ
Brett Graham VR2BG, Hong Kong

IARU Satellite Adviser

Hans van de Groenendaal ZS6AKV

IARU EMC Adviser

Christian Verholt OZ8CY

Region 3

Joong-Guen Rhee HL1AQQ

Region 3 EMR Co-ordinator

Keith Malcolm VK1ZKM

AMATEUR RADIO EXAMINATIONS

by
DEBBY MORGAN ZL2TDM
NZART Examination Co-ordinator

General

The amateur Service is defined in the Radio Regulations as: a radiocommunication service for the purpose of self training, inter communication and technical investigations carried out by amateurs, that is by duly authorised persons interested in radio technique solely with a personal aim and without pecuniary interest.

In accordance with Article 25.6 of the International Telecommunications Union Radio Regulations regarding technical and operational qualifications of amateur stations, a person operating an amateur station (whether the licensee or other person authorised by the licensee) must be the holder of a General Amateur Operator's Certificate granted in accordance with the Radiocommunications Regulations 2001.

There is now only one New Zealand amateur radio licence: General Amateur Radio Operator Licence.

Examination structure

There is only one Amateur Radio Examination. It is a sixty-question multiple-choice written examination in: radio regulations, the principles of electricity, radiotelegraphy, and radiotelephony; operating procedures, service codes and abbreviations as are applicable to the amateur service; and in the adjustment and operation of radio apparatus used in a typical amateur radio station. The sixty questions are randomly-selected by computer from a 600-question public-domain question-bank to form an examination paper. Every exam paper is different.

Study Courses Training materials and a book showing all the 600-questions are available from NZART at the address given below. See the NZART web page: <www.nzart.org.nz>.

Requirements for certificates

Forty correct answers are required for a pass.

Taking the examination

The Examination Division of NZART conducts examinations on behalf of the Ministry of Economic Development Radio Spectrum Management group (MED RSM).

The date, time and place for the examination are by mutual arrangement between the supervisors and the candidates. The allowed time for the examination is two hours, with an extra reading time of ten minutes.

Applications for examinations

Applications for all examinations should be made to your local examination supervisor. A list of supervisors can be found on the NZART web page or from NZART Headquarters. The supervisors expect you to contact them.

Examination fees

A fee of $25 is required to accompany the examination application. Should you fail the first time and wish to re-sit, there is no further fee.

Examination result notification

If you are successful you will receive an Examination Result Notification (ERN) form direct from the examiners. On completion of a Radio 1 Application Form, please forward the ERN and the application form to the Ministry of Economic Development on the address listed on the form. This is the proof of your successful result, no fee is payable for the new licence.

Examination recounts

Applications for recounts of the marks awarded must be made to the NZART Examination Division no later than one month after the examination in respect of which mark in question was awarded.

Call-signs

Your licence gives your call-sign. Application may also be made for a specific radio call-sign, if not already allocated.

Further enquiries

Please direct any enquiries about the Amateur Radio Examination to: NZART Examination Division, PO Box 40-525, Upper Hutt 6415.

Telephone (+64 4) 939-2189, Fax (+64 4) 939-2190. E-mail <exam@nzart.org.nz>.

Morse code

Competency in the Morse code is not needed for a licence. NZART provides a Morse test for travellers to countries requiring evidence of Morse competency for reciprocal licensing. Tests are also available by mutual arrangement for individual challenge purposes.

A certificate of achievement is available from Morse testing supervisors on attaining a speed of five words per minute or higher, sending and receiving. The test details are available on application.

Note to branches

The NZART Morse Testing Service is managed by the Examination Co-ordinator, an officer of the Association. The Morse tests are administered by participating NZART Branches. Branches are responsible for choosing a Morse Tester and a Scrutiniser from the members of their Branch. These persons should be members of NZART. NZART requires the names, call signs and contact details of the persons the Branch nominates to these roles, with this information annually updated. The Examination Co-ordinator will appoint the Morse Examiners. Each is given registration number.

A candidate is to contact a local Morse Tester. The Tester will arrange a date for the test. The test text pieces will be computer-generated in Farnsworth format. Each Branch is responsible for providing the necessary hardware, computer, oscillator, key and earphones as required. There is no fee for a Morse test.

STOLEN REGISTER

by
ROY SYMON
ZL2KH

The Stolen Equipment Register is operated by me on behalf of NZART, for the benefit all radio amateurs and is only as effective as the rate of reporting thefts. Thefts are an invasion of privacy, traumatic, and antisocial. They can also be seen by some as being an opportunity for upgrading equipment at the expense of the insurance company. Whatever the attitude you take when you are robbed—please report the event to me so that it might be prevented from happening to someone else.

Details of stolen equipment to be notified to:
Roy Symon, ZL2KH,
25 Annandale St, New Plymouth.
Phone: (06) 758-2156.
Cellular: 027-245-1406
E-mail: zl2kh@nzart.org.nz

This is to be in writing and to include all relevant details such as: make, model, where and when stolen, and a copy of the notice from the Police verifying that the theft has been notified to them.

Any notification made to me by telephone or packet must be confirmed as soon as possible, in writing, as accurate records are a necessity and help to prevent malicious or false reports getting into the system.

There should be a declaration from the owner that the equipment belonged to them and that, to the best of their knowledge, all the details supplied are true and correct.

A lot of the details I find necessary will not be published. The lists will only show the make, model, serial number, date stolen; whereas I would need to know the location, owner's name and address, Police station to which notification was made, etc.

Updates of stolen equipment will be published in Break-In, HQ Info-Line, and will be on the NZART Official Broadcast.

I have compiled a cross-indexed database so that any parameter can give a match or access—and it is possible to give an answer re listing or otherwise over the phone in a similar manner to that given to people purchasing a car—all care and no responsibility though as the list could never be guaranteed as being complete. I would merely be able to state that a particular serial number did or did not appear on the list.

The aim of keeping this register is to make stealing amateur equipment unattractive (or even downright repulsive) to the stealer; to prevent amateurs purchasing stolen equipment and subsequently having it confiscated; and to recover stolen equipment for the rightful owner. The temptation to buy a very cheap rig that has fallen off the back of a truck should be resisted at all times—the next gear stolen could be *yours*!

Please notify me, as soon as possible, of any stolen equipment that is recovered—it can then be withdrawn from the register and will help me measure the success of the scheme.

Roy Symon ZL2KH
Manager, NZART Stolen Equipment Register

Radiocommunications Regulations (General User Radio Licence for Amateur Radio Operators) Notice 2006

Pursuant to Regulation 9 of the Radiocommunications Regulations 2001 ("the Regulations") made, under section116 (1) (b) of the Radiocommunications Act 1989, and acting under delegated authority from the chief executive, I give the following notice.

Notice

1. Short title and commencement—(1) This notice is the Radiocommunications Regulations (General User Radio Licence for Amateur Radio Operators) Notice 2006.

(2) This notice comes into force on July 1, 2006.

2. General user radio licence—A general user radio licence is granted for the transmission of radio waves by amateur radio operators in New Zealand, for the purpose of communications in the amateur radio service in accordance with the terms, conditions and restrictions of this notice.

3. Terms, conditions and restrictions applying to New Zealand amateur operators—(1) Persons who hold a General Amateur Operators Certificate of Competency and a call-sign issued pursuant to the Regulations, may operate an amateur radio station in New Zealand.

(2) The call-sign prefix of "ZL" may be substituted with the prefix "ZM" by the call-sign holder for the period of, and participation in, a recognised contest, or as the control station for special event communications.

(3) Operation on amateur bands between 5 MHz and 25 MHz is not permitted unless a person has held a General Amateur Operators Certificate of Competency for three months and logged 50 contacts during this period. The person must keep the logbook record for at least one year and, during this period, produce it at the request of the chief executive.

4. Terms, conditions and restrictions applying to visiting amateur operators—(1) Persons visiting New Zealand who hold a current amateur certificate of competency, authorisation or licence issued by another administration, may operate an amateur station in New Zealand for a period not exceeding 90 days, provided the certificate, authorisation or licence meets the requirements of Recommendation ITU-R M.1544 or CEPT T/R 61-01 or CEPT T/R 61-02 and is produced at the request of the chief executive.

(2) The call-sign must be the national call-sign allocated by the other administration to that person, in conjunction with the prefix or suffix "ZL" which is to be separated from the national call-sign by the character "/" (telegraphy), or the word "stroke" (telephony).

5. Terms, conditions and restrictions applying to all amateur operators—(1) The use of call-signs, including temporary and club call-signs, must be in accordance with publication PIB 46 "Radio Operator Certificate and Callsign Rules" published at <www.rsm.govt.nz>.

(2) Call-signs must be transmitted at least once every 15 minutes during communications.

(3) National and international communication is permitted only between amateur stations, and is limited to matters of a personal nature, or for the purpose of self-training, intercommunication and radio technology investigation, solely with a personal aim and without pecuniary interest. The passing of brief messages of a personal nature on behalf of other persons is also permitted, provided no fees or other consideration is requested or accepted.

(4) Communications must not be encoded for the purpose of obscuring their meaning, except for control signals by the operators of remotely controlled amateur stations.

(5) Except as provided to the contrary in this notice, transmitter power output must not exceed 500 watts peak envelope power (pX), as defined in ITU Radio Regulation 1.157.

(6) In accordance with Article 3 of the International Radio Regulations, amateur stations must, as far as is compatible with practical considerations, comply with the latest ITU-Recommendations to the extent applicable to the amateur service.

(7) In accordance with Article 25 of the International Radio Regulations, amateur operators are encouraged to prepare for, and meet the communication needs of, national and international disaster relief.

(8) Amateur beacons, repeaters and fixed links may not be established pursuant to this licence.

(9) Unwanted emissions outside the frequency bands specified in this schedule must comply with the requirements of technical standard ETSI ETS 300 684 published by the European Telecommunications Standards Institute (ETSI).

(10) The ranges of frequencies, and specific conditions of use, are those prescribed in the Schedule to this notice.

6. Consequential revocation of licences—(1) The Radiocommunication Regulations (General User Radio Licence for Visiting Amateur Radio Operators) Notice 2004 dated the 2nd day of July 2004 and published in the *New Zealand Gazette*, 8 July 2004, No. 85, page 2118, is revoked.

(2) All radio licences of the class Amateur General (H5) granted pursuant to the Regulations, are revoked.

Schedule

The Schedule is shown in Table 1 (above).

Notes to Schedule

1. Table 2 shows the ranges of frequencies which may also be used for amateur satellite communications.

2. These frequencies are, or may be, allocated for use by other services. Amateur operators must accept interference from, and must not cause interference to, such other services.

3. The frequencies:

27.12 MHz (26.957–27.283 MHz),
433.92 MHz (433.05–434.79 MHz),
921.5 MHz (915–928 MHz),
2.45 GHz (2.4–2.5 GHz),
5.8 GHz (5.725–5.875 GHz),
24.125 GHz (24.00–24.25 GHz),
122.5 GHz (122–123 GHz), and
245 GHz (244–246 GHz),

are designated for industrial, scientific and medical (ISM) purposes. These frequencies may also be allocated to Short Range Device (SRD) services. Amateur operators must accept interference from ISM and SRD services within these frequency ranges.

4. Allocated to the amateur service on a temporary basis until further notice.

5. Telecommand and telemetry operation only.

6. Radiated power must not exceed 5 watts e.i.r.p.

CONTINUED ON PAGE 3–6

Table 1.

Frequency Range	Notes	Frequency Range	Notes
130 to 190 kHz	2, 4, 6	921.00 to 929.00 MHz	3, 7
1.80 to 1.95 MHz	2	1.24 to 1.30 GHz	1, 2
3.50 to 3.90 MHz	2	2.396 to 2.45 GHz	1, 3
7.00 to 7.10 MHz	1	3.30 to 3.41 GHz	1, 2
7.10 to 7.30 MHz	2	5.65 to 5.85 GHz	1, 3
10.10 to 10.15 MHz	2	10.00 to 10.50 GHz	1, 2
14.00 to 14.35 MHz	1	24.00 to 24.05 GHz	1, 3
18.068 to 18.168 MHz	1	24.05 to 24.25 GHz	3
21.00 to 21.45 MHz	1	47.00 to 47.20 GHz	1
24.89 to 24.99 MHz	1	75.50 to 76.0 0GHz	1, 2
26.95 to 27.30 MHz	2, 3, 5, 6	76.00 to 81.00 GHz	1, 2
28.00 to 29.70 MHz	1	122.25 to 123.00 GHz	2, 3
51.00 to 53.00 MHz	2	134.00 to 136.00 GHz	1
144.00 to 146.00 MHz	1	136.00 to 141.00 GHz	1, 2
146.00 to 148.00 MHz	2	241.00 to 248.00 GHz	1, 2, 3
430.00 to 440.00 MHz	1, 2, 3	248.00 to 250.00 GHz	1
614.00 to 622.00 MHz	2	275.00 to 1000 GHz	2, 4

Table 2.

7.00 to 7.10 MHz	435.00 to 438.00 MHz	24.00 to 24.05 GHz
14.00 to 14.25 MHz	1.26 to 1.27 GHz*	47.00 to 47.20 GHz
18.068 to 18.168 MHz	2.40 to 2.45 GHz	75.50 to 81.00 GHz
21.00 to 21.45 MHz	3.40 to 3.41 GHz	134.00 to 141.00 GHz
24.89 to 24.99 MHz	5.65 to 5.67 GHz*	241.00 to 250.00 GHz
28.00 to 29.70 MHz	5.83 to 5.85 GHz†	
144.00 to 146.00 MHz	10.45 to 10.50 GHz	

*limited to the earth-to-space direction.
†limited to the space-to-earth direction.

THE NZART QSL BUREAU

The NZART QSL Bureau is one of a network of approximately 185 bureaux established by the IARU to facilitate the exchange of QSL cards between NZART members and radio amateurs and listeners throughout the world.

Outward QSL cards

The service is free to both transmitting and non-transmitting members of NZART—**non-members** may make use of this service at a cost of **25c per card.** All QSL cards for forwarding to radio amateurs and listeners in New Zealand and overseas countries should be posted to:

The QSL Manager
NZART QSL Bureau
PO Box 857
Wanganui Mail Centre
WANGANUI 4540

The call-sign of the station to whom the card is addressed should be **printed clearly on both sides** of each card. Are you sending your card to a DX-station's Manager? If so, please write the Manager's call on the back of the cards. (Cards are sorted using the call printed on the back of the card.) If you see fit not to write the recipients' call-signs on the back of your cards, it is pointless to carry out the last instruction—we are not clairvoyants! When writing call-signs onto your cards, please take care with the forming of the letters and numbers. Make sure that the letter V will read V, not U, an "S" looks like an ess and not the figure "5" and vice versa, etc. This will greatly help the Bureau staff in their sorting! Remember also that English is not the first language of everybody handing and receiving your cards!

Please sort your QSL cards into New Zealand call-district order (ie ZL1-ZL2-ZL3-ZL4, etc), USA and Australian call-district order and all others in alphabetical order: eg A3, EA, ES, EU, G, I, OK, S5, SM, UA, UN, UR, VK1-2-3, etc, W1-W2-W3, etc (USA prefixes are kept together—A-K-N-W1 cards all go to their First District Bureau; likewise all A-K-N-W2 cards go to the Second District Bureau and so on), VU, ZL1-ZL2-ZL3-ZL4, 3D, 5W, 9A etc. **Please do not separate countries with rubber bands, strips of paper etc.**

Members must enclose a current year *Break-In* label with each posting. After complying with the above, sit back and be patient!

Inward QSL cards

The NZART QSL Bureau provides a **free inward service for all New Zealand amateurs and listeners.**

Collecting cards from the sub-bureaux by members and non-members

Please note that the four New Zealand sub-bureaux are arranged to cover the four mainland prefixes. A ZL1 living anywhere in New Zealand deals with the ZL1 sub-bureau, ZL2s likewise with the ZL2 sub-bureau. and so on through to the ZL4s. Supply your particular QSL sub-bureau (listed below) with a supply of suitable size self-addressed stamped envelopes (SASEs) to receive your incoming cards. Envelopes should be numbered and "Last Envelope" marked on one so that you are reminded when to renew the supply. Please make sure that you include your call-sign on the front of your envelopes as each sub-bureau only deals with call-signs and not with operators' names. Any specific requests for forwarding cards should be printed on the back of the envelopes: for example "send monthly" or "send when there are 10 cards" etc.

Some Branches have special arrangements for "Branch postings" in place with the appropriate sub-manager. Contact your local Branch secretary for information. (The possible provision of this service is totally the prerogative of each individual sub-manager and there is no compulsion on any person to be a party to any such collective scheme.)

QSL sub-managers

ZL1

Mr J. Small ZL1KQ, 32 Paddington Street, Glen Innes, AUCKLAND 1072.

ZL2

Mr A. H. Marr ZL2AGY, 51 Taylors Road, OTAKI 5581.

ZL3

Mr E. W. Jefferis ZL3DV, 4 Cunningham Street, Leeston 7632, CANTERBURY.

ZL4

D. A. Adams ZL4OZ, 26 Wills Street, Balaclava, DUNEDIN 9011.

Your QSL Card

1. **Should not exceed 140×90mm** in size.

2. Have all the necessary information on one side of the card—if you intend having a two-sided card, make sure your call-sign is printed on **both** sides.

3. Use Universal Co-ordinated lime (UTC) (formerly referred to as GMT, also referred to as Zulu time)—New Zealand Standard time (NZST) or New Zealand Daylight Saving Time (NZDT) is meaningless to 99.9 per cent of amateurs—and you do want a card back from them!

4. It is advisable to write out the name of the month to avoid confusion.

5. **Do not correct mistakes—make out a new card.** Altered cards are valueless to the recipient

Any further information concerning the business of the QSL Bureau, or requests for info on DX station QSL Managers/direct mail addresses (we will do our best to assist!) can be obtained from the QSL Manager at P0 Box 857, Wanganui Mail Centre, WANGANUI 4540 or e-mail <zl2rr@xtra.co.nz>.

PS! Special calls and DXpeditions

If you, or your Branch, put on a special event/contest station using a special call-sign allocation for the duration thereof, or partake in a DXpedition, please notify the QSL Bureau Manager and supply him with the relevant QSL Manager info!

CONTINUED FROM PAGE 3–5

7. Radiated power must not exceed 25 watts e.i.r.p.

Dated at Wellington this 13th day of June 2006.
SANJAI RAJ, Group Manager, Radio Spectrum Management, Business Services, Ministry of Economic Development

Explanatory Note

This note is not part of the notice, but is intended to indicate its general effect.

This notice prescribes that, pursuant to Regulations made under the Radiocommunications Act 1989, a general user radio licence is granted for the transmission of radio waves by amateur radio operators in New Zealand, for the purpose of communications in the amateur radio service, in accordance with the terms, conditions, and restrictions of this notice. This notice comes into force on July 1, 2006.

Remember

Leave a three second pause between overs when working repeaters

SUSTAINING THE AMATEUR SERVICE

A responsibility for each of us!

The amateur radio qualification is an achievable challenge to most people and is useful to career-seekers in our technological world. It shows aptitude and sincere interest in communications, and identifies an achiever. It can give a jump over others in this competitive world.

The late 1940s was a time with a wave of new entrants into amateur radio. Let us all try to promote a return to that level of interest! NZART Council encourages newcomers into Amateur Radio. This calls for the help of all radio amateurs. A challenge to all of us. Council has adopted the expression The New Wave to embrace initiatives and objectives to encourage new entrants.

(1) The NZART Constitution in its object says:

"The objects of the Association shall be the maintenance and expansion of the Amateur Service in New Zealand by:

"(a) the encouragement of recruits into the Amateur Radio movement

"(b) the provision of guidance and instruction in radio techniques and operating

"(c) the promotion organization and conduct of activities on a national and local basis ...", etc.

(2) These objects are further reflected in wording in the NZART Strategic Plan, in particular Objective 2:

"To promote knowledge of amateur radio and encourage newcomers. To assist Branches in local activities, especially in schools. To provide education and training aids. To award suitable prizes and other recognition."

And, in the plans of action:

"To publish information in *Break-In*, training materials and aids, educational and publicity material."

(3) The NZART Strategic Plan Objective 3 states:

"To provide guidance and instruction in radio techniques and operating, and encourage practical experimentation."

With your guidance and your help, others too can experience the thrills of Amateur Radio. Active encouragement and support are sought from all NZART members and from all Branches to recruit newcomers and to run classes in preparation for the amateur radio examination.

Branches are encouraged to actively promote Amateur Radio. Master copies of brochures, posters and other leaflets and publicity material are available to Branches for this purpose, free of charge from NZART Headquarters.

A sticker is available to NZART members from NZART Headquarters for 50c each. This is for displaying in the rear window of vehicles to show your support in a national campaign to increase the awareness of Amateur Radio in the general population.

Many computer users are unaware of amateur radio and what it has to offer. You are encouraged to widely advertise the NZART World Wide Web page, <www.nzart.org.nz>.

Simple-to-construct equipment is a way to show youth groups and other interested persons the fun of Amateur Radio. Show how inexpensive home-construction brings delight and excitement from the achievement of communicating without wires over long distances using self-built gear. Articles from *Break-In* may be freely photocopied and distributed for this purpose.

The Novice licence is an achievable challenge. Do you know anyone who has shown interest in Amateur Radio? A youth or grandchild perhaps? Spread the word by demonstration!

After passing the amateur radio examination, a call-sign is issued by the Ministry of Economic Development, a call-sign that is unique world-wide. The challenge to attain such an identifying call-sign brings its own rewarding fun.

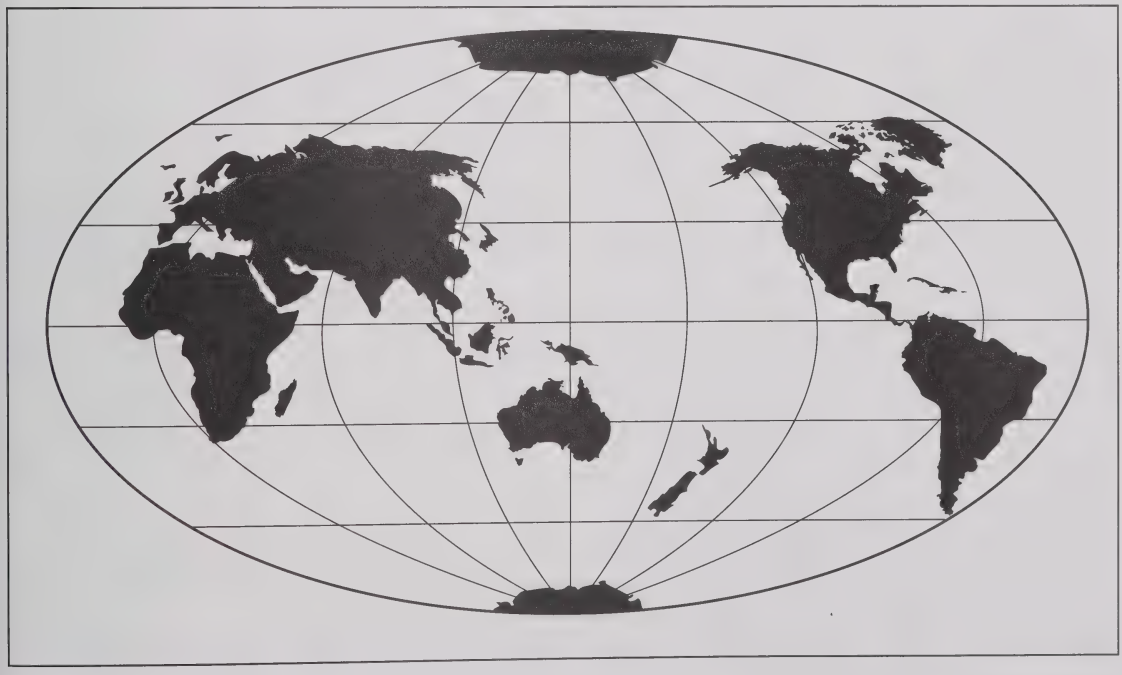
A local "group project", with the challenge to interest newcomers to develop their own local on-air amateur radio net, is worthy of consideration and encouragement.

The construction of receivers, transmitters and other projects under the guidance of experienced constructors at "club workshop nights" are worthy Branch activities.

Each Branch should appoint an "NZART Agent" as one of their executive, the task being to gain increases in NZART members, both Transmitting and Non-Transmitting, in their local areas.

A national and concerted effort by all New Zealand Radio Amateurs to promote Amateur Radio is necessary to ensure the continuation of a healthy and vigorous Amateur Service.

Help bring The New Wave of radio amateurs!



A GUIDE TO VHF AND UHF FOR NEW LICENSEES

Jane Atkinson ZL2QO, Jim Meachen ZL2BHF, Stephen McNeill ZL4HG
This article has been prepared by those listed above on behalf of the Wellington VHF Group, Branch 74 NZART (Inc.), PO Box 12-259 Wellington, to offer guidance to the newcomer to the wonderful world of amateur radio.
"Sam the Mobile Man" guest appearance courtesy of Sue Lill
© August 1994

Why such an article?

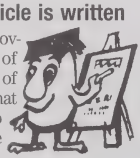
You've just got your licence. Your new rig has arrived today and is ready for use. You turn the power on. So, what do you do?

It can be pretty daunting when you first start out knowing what to say, or what not to say.

This article is designed to help you through your first few contacts. It's important to remember that there are no fixed rules. Many of the observations that are made in this article are the result of experiences we have had over a number of years, and you must remember that your operating may not necessarily cover what we've been interested in. So be it. This is a guide. Use it as a kind of à la carte offering of ideas.

The only way to become familiar with the operating procedures on VHF or UHF is to spend some time listening to the good operators, noting how and why their methods succeed where those of the poor operator do not. It is quite important as newcomers that you should be discriminating in this respect, and not simply mimic what you have heard when going on the air for the first time. To summarize, copy the good operators, and not the bad ones!

How this article is written



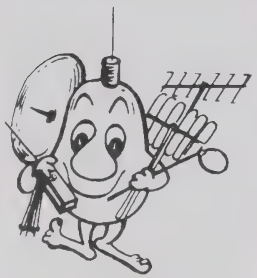
The article covers a number of different facets of amateur radio that you are likely to encounter in the VHF spectrum. You'll find these are often the same ideas you'll use on HF, but that kind of operating is beyond the scope of this article. You can find some excellent books on the general topic of operating, and you're encouraged to seek out the information contained therein. Some good examples of operating books, all of which can be obtained from NZART Headquarters, are as follows:

★ A Guide to Amateur Radio, Pat Hawker G3VA, RSGB, Nineteenth Edition.

★ Amateur Radio Operating Manual, R. J. Eckersly G4FTJ, RSGB, Third Edition.

★ The ARRL Operating Manual, edited by Robert J. Halprin K1XA, ARRL, Third Edition.

★ AREC Manual, NZART, 1978.



Some terminology

There are lots of words that are used everyday in the world of VHF in amateur radio. Among the most common are as follows:

AM **A**mplitude **M**odulation. A method of voice encoding a transmission which is seldom used these days. Specifically the strength of the signal transmitted varies with the strength of the voice signal.

AMSAT Amateur Satellite Corporation. An amateur radio organization promoting and developing the amateur satellite service. Over two dozen satellites have been built by amateurs worldwide and are universally available.

AREC **A**mateur **R**adio **E**mergency **C**orps. Groups of amateurs within NZART Branches who provide emergency communications in conjunction with other organizations as the situations demand.

ATV **A**mateur **T**elevision. The transmission of video signals by radio amateurs. This transmission can sometimes take place through a special kind of repeater.

Autopatch A device for interfacing a repeater to a telephone line. Such a device responds to audio tones generated by a telephone touch-tone pad connected to the user's rig or microphone.

Break The word used to interrupt a conversation on a repeater, often to indicate there is an emergency.

Call Book An annual publication by NZART that contains amateur call-signs, frequency allocations, repeater maps and other vital operating information.

Channel The pair of frequencies, input and output, used by a repeater.

Clear Indicates the end of a contact.

Coverage area the geographic area within which a repeater provides communications (sometimes called the footprint).

CQ A general call made requesting someone to talk to.

CTCSS **C**ontinuous **T**one **C**oded **S**quelch **S**ystem. (Sometimes known as PL or Private Line.) A sub-audible tone system used when you want to activate just one or a small number of remote receivers.

CW **C**ontinuous **W**ave. Commonly known as Morse code. Used in weak signal or long distance applications and sometimes in conjunction with amateur satellites. This is an "on-off" or dot-dash type of transmission.

Data repeater A repeater specifically designed for use in passing data, rather than voice communications. Of course, it may be used for both.

Digipeater A Packet radio repeater. Packet radio is a form of data transmission. Voice cannot be transmitted through a digipeater.

Dropping out The situation that exists, while you are using a repeater, when your signal does not quite have enough strength to keep the repeater triggered (see "Trigger").

DTMF **D**ual **T**one **M**ulti **F**requency. A system often used for repeater control, using two tone frequencies. This control is often achieved by a simple keypad on your microphone or rig.

Duplex A mode of communication in which you transmit and receive simultaneously.

FM **F**requency **M**odulation. A method of voice encoding a transmission, which is frequently used in conjunction with repeaters. Specifically, the strength of the signal transmitted is constant but its frequency varies with the strength of the voice.

FTMAG **F**requency **M**anagement and **T**echnical **A**dvisory **G**roup. A group that advises NZART on technical matters, particularly those relating to VHF and repeaters.

Full quieting A received signal that contains no noise.

Handheld A portable receiver that is small enough to fit in the palm of your hand.

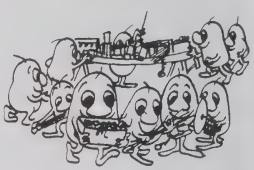
Handle This refers to your name. Note, the term "personal" is not generally used in amateur radio.

Horizontal polarization The nominal orientation that a radiowave is taken to have as a result of an aerial's physical layout and orientation. Horizontal polarization is by convention very often used in weak signal applications at VHF/UHF.

Input frequency The frequency that the repeater receives on, and also the frequency on which you transmit to the repeater.

Magnetic mount (Also **Mag Mount**) A mobile antenna with a magnetic base that enables quick installation and removal from a car.

Ministry of Economic Development (Radio Spectrum Division) Ultimately responsible for the administration of all the radio frequency spectrum in New Zealand.



NiCd (also **Nicad**) A Nickel-Cadmium battery that may be recharged.

NZART **N**ew **Z**ealand **A**ssociation of **R**adio **T**ransmitters (Inc). New Zealand's national amateur radio society, PO Box 40-525, Upper Hutt.

Offset The difference between a repeater's transmit and receive frequencies. In New Zealand this is plus or minus 600 kHz on the 2 m band and 5 MHz on the 70 cm band.

Output frequency The frequency that the repeater transmits on, and also the frequency on which your receiver receives the repeater.

Over The word used to indicate the end of a voice transmission.

Packet radio A way of transferring data or messages between amateurs across town, about the country or around the world.

Phone patch A device for interfacing the audio input and output of a radio transceiver to a telephone line.

RDF or **DF** **R**adio **D**irection **F**inding. The amateur technique of locating a transmitter.

Repeater trustee Person elected by an NZART Branch to take responsibility for proper operation of a repeater.

Roger The word that indicates all information was received correctly.

SAR Search And Rescue.

Simplex A mode of communications where you transmit and receive on the same frequency.

Sked A pre-arranged radio contact between two or more stations.

SSB Single Sideband. A method of narrow band voice encoding commonly used for long-distance or weak signal communications in both the high Frequency (HF), VHF and UHF parts of the spectrum. Very commonly used in conjunction with amateur satellites.

STSP Repeater Short Term Special Purpose **Repeater.** A repeater designed for emergency use or during special events.

Tone pad A device that is used to generate a standard set of tones that can be used to control certain functions on a repeater, or remote equipment (see DTMF).

Triggering To activate a repeater by transmitting on its input frequency.

Vertical polarization The nominal orientation that a radio wave is taken to have as a result of an aerial's physical layout and orientation. Vertical polarization is by convention very common in repeater operation at VHF/UHF. Antennas on handhelds when held upright and on cars are vertically polarized.

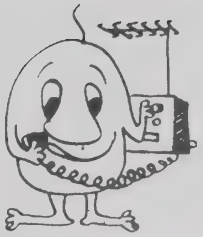
NZART

The New Zealand Association of Radio Transmitters (Inc) is New Zealand's representative society for radio amateurs. It provides a wealth of services to assist both the new and established amateurs. It publishes a monthly magazine (Break-In) and an annual Call Book. It represents the interests of amateur radio at both the national and international levels. It is controlled by an Executive Council elected by members. It has over 80 Branches throughout New Zealand, and has a membership of over 3000 amateurs.

One of the services that is provided by NZART is the planning of band usage and the national co-ordination of repeaters and beacons. It does this based on the recommendations of its Frequency Management and Technical Advisory Group (FMTAG).

Inquiries about NZART services and membership may be directed to:

NZART Headquarters
PO Box 40-525
Upper Hutt



Establishing a call

There are two accepted way of establishing contact with another station. The first method is to put out a general call to all stations, known as a "CQ", and to hope that another station responds. The second is to call another specific station by prior arrangement, known as keeping a "sked", or after the other station has just finished a contact or called CQ.

CQ calls are not normally made through repeaters. Instead, stations announce that they are "listening" on the repeater. For example, you might say:

"This is ZL2BHF listening seventen."

To start a sked with another station, you will call the other station by its call-sign, followed by your own call-sign, such as:

"ZL2QO, this is ZL4HG."

The station that is being called might have his or her call-sign repeated a few times, just in case they don't hear the single call. You might also be wise to issue your own call-sign in phonetics so that there is no mistake who you are. For example:

"ZL2QO, ZL2 Quebec Oscar, ZL2QO, this is ZL4HG, ZL4 Hotel Golf, ZL4HG."

However, remember that phonetics really only need to be used to clarify who you are in conditions that might make certain letters ambiguous, or where the band is noisy, or where your signal is likely to be weak. Over-use of phonetics is rather annoying, and time consuming.

Answering a call

You answer a CQ or sked call from another station in the same way that you would make the sked call in the first place. For example, in the above instance, where ZL4HG is trying to call ZL2QO, the latter station might answer the call in the following way:

"ZL4HG, this is ZL2QO ..."

and the conversation would continue. It's that simple!

How to pass transmission to another station

When you have finished saying what you want to say on one transmission, and you want the other station to reply, you do so by simply saying the word "over".

Before you say the word "over", you may want to indicate the other station's call-sign, and your call-sign too, in that order. Note that it is not absolutely necessary to give both call-signs at the beginning and end of each and every over, your own call-sign will suffice. But, if you do give the call-sign, you must give the full call-sign, not an abbreviated version. For example, use "ZL2BHF" and not "2BHF" or "BHF".

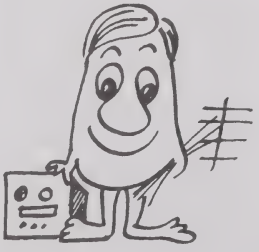
Letting other stations in

If you are in the middle of a conversation, and a station transmits his call-sign in the pause between transmissions, the next station in the queue to transmit should acknowledge that station and permit him or her to make a call and join the conversation. It is not polite to ignore him and, furthermore, it is rude to acknowledge him but not to let him speak. You never know, the calling station may need to use the repeater immediately. He may have an emergency on his hands, so let him make a transmission promptly.

Joining an existing conversation

If you wish to join a conversation that is already in progress, transmit your call-sign between transmissions. The station that transmits after you drop in your call-sign will acknowledge you, and usually invite you to transmit.

A brief pause, say three seconds, before you begin each transmission allows other stations to participate in the conversation. So don't transmit immediately that the other station stops. If you begin transmitting too quickly, you can prevent other stations from getting in. Also, there might be an emergency, so leave a pause!



Before you join an existing QSO, stop and think, "is it appropriate for me to join in?". If it's a technical matter and you know something about it, it's probably all right. If it's on a more personal level, it might be better to wait until they have finished before giving a call, unless you know them fairly well. Either way, just give your call-sign and wait to be invited in. Jumping straight in with your comments is no better manners on the air that it is in person.

How to tell when it's your turn to talk

The station with whom you are talking will pass transmission back to you by one of the methods outlined above. Remember the pause before you transmit!

When and how often to give call-signs

A major source of frustration and annoyance to many operators can be the excessive use of call-signs. Take this example:

"Zl4 HG from ZL2BHF, are you parked yet Stephen? Over."

"ZL2BHF from ZL4HG. Yes. Over."

"ZL4HG from ZL2BHF, OK I'll see you later. Over."

"ZL2BHF from ZL4HG, over where, over."

We suggest you identify yourself at regular intervals, say once every ten minutes, as well as at the beginning and end of a conversation.

Standards of language, and topics best avoided

Acceptable language should be used at all times. Even what seem like mild expletives can cause offence to some people, and may pave the way for worse behaviour from others.

Whatever bands, mode or type of operating one is undertaking, there is a fundamental point to remember. That is that the "private" conversation with the other station is actually in public. Never discuss emotive subjects, such as politics, race or religion over the air to avoid the possibility of giving offence to others. Never give any information over the air which might be of assistance to the criminally inclined, such as the time that a house is unoccupied,

dates of holidays, and valuables in the house. Telephone numbers, especially those belong to others, should be handled with considerable discretion.

Unidentified transmissions

Occasionally you may hear a conversation that you think you can enhance with a suitably witty addition, suitably anonymous. Don't be tempted to do so! All transmission must be identified! If you hear someone who appears to be a pirate, or who might perhaps be trying to bait the users of the frequency, don't rise to the bait—just ignore them. They will soon become bored and go away.

List of commonly heard Q Codes

Q Codes were originally developed for use with Morse code, to speed up the sending of commonly-used phrases. They are not strictly necessary when carrying on a voice contact, since it is usually just as quick to use the ordinary English equivalent: eg "Go to six-five-two-five" instead of "QSY six-five-two-five". However, some Q Codes are still used quite a bit on VHF and UHF. The more commonly used ones are:

QRM Interference
QRN Static
QRO High power
QRP Low power
QRT Cease transmitting
QRX Stand by
QRZ Who is calling? Who is there?
QSB Fading
QSO Contact, conversation
QSY Change frequency, go to
QTH Location

What a repeater is and how it works

A repeater is a special kind of transmitter and receiver combination that receives a signal and simultaneously retransmits it. A repeater situated on a vantage point such as a hilltop can dramatically increase the range of VHF and UHF communication in hilly areas and for users of low-power transceivers such as handhelds. To prevent the repeater from becoming unusable due to feedback, the receive and transmit frequencies are different. The difference between the two signals is known as the offset or split (see definitions).

To access a repeater, an amateur transmitter has to be set up so that it transmits on the repeater's input frequency and receives on the repeater's output frequency. Most (but not all) repeaters continue to transmit a carrier (known as the "tail") for a few seconds after the input signal ceases, so that the user can check that he or she is actually accessing the repeater. A list of repeater frequencies is given in Section 7 of this Call Book.

In New Zealand all repeaters are "open", that is, any licensed amateur is permitted to use the repeater without necessarily being a member of the local club. This is not necessarily the case in other countries.

Repeater timeouts

Some repeaters incorporate timing devices. These prevent an over from lasting longer than the time that the repeater is set to, usually two or three minutes. If a station transmits for longer than this, the repeater will cease retransmitting after the allotted time is up and a deathly hush will descend upon the frequency. The repeater timer resets when a new transmission begins. Two repeaters that currently incorporate this feature are Motueka 670 and Manawatu 910 (part of the National System).

Repeater alarms

Some of the more sophisticated repeater systems incorporate alarms to warn users of such things as power failure. Usually some kind of tone or signal will appear briefly at the end of each over.

The signal that appears after each transmission on Blenheim 695 is not an alarm but an identifier. It transmits the characters "BM" in Morse.

If you hear an alarm signal, first make a note of what type it is. If it is a digitized voice, what it is saying? Notify the repeater trustee as soon as possible (within reason—phone calls at 3 am are unlikely to be appreciated). If you don't know who the trustee is, get in touch with a committee member of the branch responsible for the repeater.

Most mains-powered repeaters have battery backup systems so that they can keep going if the power fails. As the repeater might have to remain on emergency power for some time, it is best not to use the repeater unless you really need to. Conserve emergency power for emergency use.

DTMF and CTCSS control codes

Some repeaters will respond to DTMF tones (see your transceiver manual to determine if your set can generate these tones). These fall into two main types: codes for use only by trustees for controlling repeater functions, and codes for use by amateurs in general. The most common in the latter group is the signal strength report generator. If a certain sequence of DTMF tones is transmitted, the repeater will respond with an indication of the signal strength it has received. The sequence of tones and the type of response received will vary from repeater to repeater. One thing remains constant with all of them: the need to IDENTIFY YOURSELF. Something along the lines of "This is ZL2BHF testing" is usually sufficient.

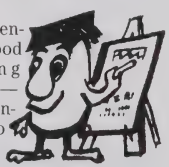
The uses of continuous tone coded squelch system (CTCSS) are many and varied. It may be used, for instance, by one station to contact a second without the second station being disturbed by other stations on the frequency. This may be useful when a station is waiting for a specific station to talk, but it is not the way most of us operate. A second use of CTCSS is as a warning that your station is being called, without necessarily locking out other stations. Manufacturers offering CTCSS facilities on their rigs often do so in a way that makes these facilities specific to their products; this may limit the usefulness of this feature. So, you should consult other amateurs before you use these facilities.

The National System

The National System is a series of dedicated linked high-quality repeaters on the 70 cm band. When a station accesses one of these repeaters, the signal is relayed to all other repeaters in the System and can be heard simultaneously up and down the country. For example, a station with a handheld in Wellington can talk via the System to a station in Auckland as if he or she were in the local region.

Guidelines for repeater use

Your local repeater will be monitored by more people than any simplex frequency, both by amateurs and non-amateurs. For many people it will be the only one they use—if it is occupied they will not be able to go to another one in the same way that another simplex channel can be used if one is busy. Therefore, extra courtesy and consideration for others is warranted.



Pay attention to good operating procedures—other listeners need to know what is going on. They will particularly want to know if a contact has been finished, so that they can use the repeater without worrying about getting in the way of someone else's conversation.

Keep in mind at all times why the repeater is there. In most cases, this will be voice communications. Non-voice modes on a voice repeater are not usual practice unless there are special circumstances—which usually means having discussed it previously with the repeater trustee. Digital modes (RTTY, AMTOR, Packet) are especially annoying to listen to and, of course, can't be deciphered without specialized equipment.

Voice on data repeaters (not digipeaters) is considered OK if that repeater is the only one you can use to make contact. It's probably best not to make the QSO any longer than absolutely necessary; you will no doubt reach this conclusion fairly rapidly yourself once the data starts coming in over the top of your transmissions!

One way use (ie, where one or more stations are not heard on the repeater output) is not advisable. A quick call to request another station to go to another frequency is OK, but it is inconsiderate and confusing to others to keep up a one-way contact for any length of time. Use simplex and a dummy load where possible for the alignment and preliminary testing of equipment. Avoid the use of repeater input frequencies for this purpose.

NZART co-ordinates the repeater system and will generally only accept proposals for repeaters that meet the guidelines commonly accepted in New Zealand. The FMTAG is responsible to NZART for the maintenance of repeater technical standards and recommended channel allocations. All repeater systems in New Zealand require a licence from the New Zealand Radio Frequency Service.

Bear in mind that all the comments above apply specifically to New Zealand repeaters and there may be marked differences in the operation of overseas repeaters and the procedures which you must use to work with them.

Amateur radio is "on display" on repeaters more than anywhere else. Try to create as good an impression as possible.

Phone patches

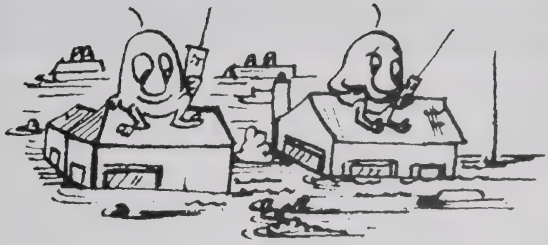
Radio regulations and licence requirements should be carefully observed when using a phone patch. Non-amateurs are not permitted to control an amateur station.

Normal traffic handled is "brief personal" messages, not business or commercial, and ONLY within New Zealand.

Phone patch equipment requires proper authorization to permit its connection to the public switched telephone network.

Packet radio

Messages sent via Packet radio should be in the spirit and tradition of amateur radio and meet



the requirements of the Radio Regulations.

Care should be taken when distributing hardware, software or publications via Packet radio as it may be interpreted by others as advertising or infringing the copyright of material originated by others.

Priorities on repeaters

Repeaters allow mobile and portable stations away from the luxuries of mains power supplies and sophisticated antenna systems to increase their range. Another important purpose is to facilitate emergency communications.

Amateur Radio Emergency Corps (AREC) operators are distinguished by the use of E (emergency) callsigns, for instance ZL2EMA. If you hear these stations, give them priority.

Portable stations are those who are operating away from home, for example, a holidaymaker at a motor camp or a tramper in the ranges. They will identify themselves by using the word "portable" after the call-sign, eg: "This is ZL2QO portable listening seven-one-seven-five." If you hear these stations, give them priority—they may not have access to a telephone and could be needing to relay an urgent message.Mobile stations are actually on the move at the time of transmission. They may quite often be heard on their way to and from work at peak hours, and will identify themselves by saying: "This is ZL4HG mobile seven-ten." There are all sorts of variations on this basic theme, such as "pedestrian mobile" (on foot), "train mobile", "maritime mobile" (all at sea?) and even "stationary mobile"—surely a contradiction in terms if ever there was one! Mobile stations may need to report breakdowns, traffic delays, traffic accidents or other urgent/important pieces of information, so should be given priority if heard.

Usually a mobile or portable station will not hog the repeater but will be listening for other stations who may need to use the frequency. With a little give and take there is plenty of room for all.

STSP Repeater

(Short Term Special Purpose repeater). A repeater designed for emergency use or during special events. An example is perhaps the need to provide communication for some local public event. It's important to note that the frequencies that protected so that the repeaters can be moved about with little chance of interference with other repeaters.

The three second rule

Three seconds should be left between each over to allow other stations to access the repeater. If another station calls, let them in straight away—they may have an urgent message to transmit.

Long QSOs on repeaters

Lengthy conversations on repeaters need to be approached with care. It would not be very thoughtful to tie up a repeater for a long time during rush hour or early evening when other people are likely to be wanting to use it. Late at night is best. Where available, a 70 cm repeater that's not part of the National System might be a better choice if there is less traffic on that band and less likelihood of getting in someone else's way. Make sure that you leave three second gaps for other traffic, and it may also be a good idea to leave longer gaps, such as 10 seconds, every so often. Bear in mind, too, that even though you may make every effort to allow other stations to use the repeater if they need to, many people would rather wait until you have finished altogether. If possible, break the conversation up into two or three shorter contacts and leave the repeater free in between them.

More of a nuisance than long QSOs are long overs, especially when there are inadequate gaps between them. At busy times, keep the overs short so as to allow others, possibly with urgent messages, to access the repeater

Checking the repeater input signal

Most radios these days have a setting called "repeater reverse", "monitor" or something similar which allows the operator to check the repeater input signal, ie, the frequency the other station is actually transmitting on. If you can hear this signal, it is a good indication that simplex contact with the station is possible.

Using simplex

Home station to home station contacts should be made on simplex where possible, thus leaving the repeaters free to facilitate mobile and portable communication.

Simplex is like carrying on a conversation at the back of a room: although fewer people will hear it, it is still not private. The same standards of language and content

apply regardless of frequency.

There are eight designated FM simplex channels on both the 2 m and 70 cm bands. A list of simplex channels is given in this Call Book.

Channel terminology

Channels or frequencies that are used on VHF/UHF are not normally named by all the numbers that make up the frequency. Instead, it is more common to use an abbreviated form of frequency for convenience. For example, the common simplex frequency of 146.525 MHz is referred to as six-five-two-five, where the rule is to omit the first two digits and the decimal point. The exception to this rule is where the frequency ends in zero, in which case the zero is omitted. For example, the frequency 147.000 MHz is referred to as seven-hundred, not seven-thousand.

Simplex and repeater signal reports

Many transceivers incorporate a signal strength meter (often called an S-meter). When you are listening to a transmission on simplex, the S-meter reading will give you an indication of how strong the station's signal is. With a repeater, the situation is quite different. The repeater signal strength remains constant, regardless of the transmitting station's signal strength.' The degree of signal quieting varies instead—a strong input signal produces a clear, noise-free repeater output—described as "fully quieting" or "fully limiting"—while a weak signal will be noisy. If a signal falls below a certain level, it will not hold the repeater reliably but will pulse it intermittently or drop out altogether.

Please remember that other stations rely on signal reports to determine how well their setup is working—try to make your signal reports as accurate as you can.

Other modes

FM is not the only mode used on VHF and UHF, in fact almost any mode can, and often is, used on these bands. For example, singleband (SSB) is used for weak signal and long-distance work towards the bottom end of the 2 m band. By contrast, CW or Morse is used for very exotic work such as earth-moon-earth (E-M-E) communication. As on all bands, you choose the mode that best suits your application and your desire for experimentation.

You should be aware that many of the conventions we have outlined above for repeater operation may not necessarily apply to some of these exotic modes. As an extreme case, in E-M-E operation contacts are highly structured, based on very severe time constraints. The precise procedures for all the modes are beyond the scope of this article. They are covered in the recommended references.

The 6 m band

The 6 m band (50–54 MHz), lying between the highest high-frequency band and the 2 m VHF band, provides some exciting scope for experimentation into unusual modes of radio propagation. Communications over several thousands of kilometres is possible under favourable conditions, while at other times the band can seem dead.

This bands lies close to the television Channel One, even overlaying part of this channel. For this reason a special MoC permit is required for operation in part of this band. You should consult a local Branch of NZART, FMTAG or known 6 m enthusiasts for details on the specific procedures before you begin operation.

Summary

Most of the special points relating to repeater use come under the category of commonsense considerations for others.

The Amateur's Code, first published in the ARRL Handbook, and reprinted in this Call Book, sums these up succinctly and we can do well to bear it in mind at all times.

LEARNING THE MORSE CODE

by GARY BOLD ZL1AN

On June 17, 2004, the Morse test was abolished as a requirement for the New Zealand Amateur licence. It had been there from the very beginning, since the first Radio Regulations were Gazetted in 1923. Over the years, the speed required fluctuated, increasing to a high of 15 wpm for a "High frequency permit" in 1945, then dropping to 12, then finally to 5 wpm in December 2001. Its passing into history is viewed with regret and sadness by some, and with joy and relief by others. But Morse will never die, and there will always be many who use it for contests and difficult DX contacts, and some who prefer it to all other modes for its simplicity and beauty.

For those reasons, and because it played an overwhelmingly important part in our history, I recommend that you at least try it.

But despite what old timers may say, very few of us found learning to copy Morse code easy. Historical research shows that learning to copy 12 wpm requires an average of about 70 hours of study, but there are wide variations. On average, about 10 per cent of learners manage it in 10 hours or less, and another 10 per cent take more than 150 hours. A very few never manage it all no matter *how* long they persevere, and I am convinced that this is because they genuinely cannot not "make sense of the sounds" at all.

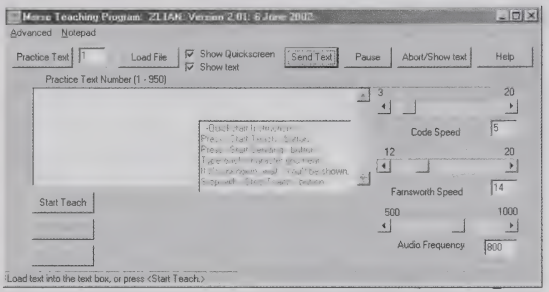
This should not surprise us. Some people are tone deaf, some cannot learn foreign languages, and some never get the hang of algebra. "Morse ability" seems to be little correlated with intelligence, musical ability, sex, age, or high achievement in other areas.

What is the "right way" to learn? *All* authorities agree that the *very worst* thing you can do is to memorize the code symbols from a printed chart. If you have one, never look at it again! Morse is an *aural* language, and *must* be learned by *listening*. This may surprise you, but the evidence is extensive and irrefutable.

I am personally convinced that the very best way to learn is from a well-written computer program. Computers are patient, non-judgemental, and very good at keeping statistics.

A suitable *free* program, written specifically for ZL test learners, is available for downloading from the NZART web-site, from a link at the bottom of the page <http://www.nzart.org.nz/nzart/Exam/morse.html>.

You'll need a PC with Windows 95 or later, and a Soundcard. The



methods used are based on scientific research, with algorithms honed by feedback from users over 15 years. I know that it teaches Morse better than I can, and has got many people through Morse tests in several countries. If you have access to a computer, get it, and try it.

If you don't have a computer, your local NZART Branch may. In fact, these days older, used Windows-capable models are so cheap that EVERY branch should have one for Morse practice, and for members to check out the modern digital modes.

There are other programs available, but some can't be recommended. If you have one that

- shows you visual symbols of the code
- teaches "opposites" (like "r" and "k") or "series" (like "eish5")
- gives only "random group" practice
- does not give you an ordered structure for learning
- teaches you to pass the US, UK or Canadian tests (which have a different format)
- sends characters at a speed *less* than 12 wpm

delete it immediately.

A picture of the recommended program's operating window is shown in the figure. Everything is done by pushing buttons, as described in the comprehensive "help" file supplied. This tells you exactly how to start, continue, and work up to a reasonable operating speed.

"Farnsworth" Morse is used throughout, and should *always* be used for learning. This mode is named in honour of Russ Farnsworth, an early teacher who popularised the method, though he was not the first to use it. Characters are sent at a *faster* rate than for "correct" morse, with longer gaps between, to reinforce the learning of characters as "complete sound sequences", and *not* as an individually-perceived dits and dahs. Failure to teach this way is now recognised as the reason for the infamous "plateaus" that learners reached around 10–14 wpm, which old-timers may mutter darkly about. Using Farnsworth Morse, this plateau is eliminated. The next one most people strike isn't usually reached until around 40–50 wpm!

However you proceed, you should learn the *numbers* at the same time as the *letters*. If you leave them "until later", they'll be harder because you won't have practiced them as much.

The program recommended above implements all of these features. The initial character teaching process is aural, and adaptive, with characters introduced at a rate governed by your own response from the keyboard, reinforced by a histogram display showing your progress. Several sessions will be necessary for this, but the program will give you a progress report at the end of each one, and you'll probably be surprised to see your ability continually improving.

Having learned the characters, 900 plain-language texts, similar to the old test texts are provided for practice. Now you can start to write down the text. I recommend starting at an overall speed of 3 wpm, which gives you about two seconds "thinking time" between characters, and increasing this as you gain proficiency. As well as these texts, 50 "sample QSOs" are provided to help you get used to what you'll hear on the HF bands.

Start *sending* practice *only* after you have the correct *sound* and *rhythm* of the characters firmly imprinted in your mind. Most of the candidates I examined in the last years of the Morse test had considerable trouble attaining acceptable sending, because they started with the wrong grip, and sent with *finger* instead of *wrist* movement. It's easier to see the correct way than to describe it. If at all possible, get an expert at the local Branch to show you how it's done, and get *your* action right.

Several excellent free Morse *reading* computer programs can also be downloaded from the web. While such programs require reasonable code and signal strength, many have found that *watching* the words form on the screen while *listening* to them aids the learning process. Besides, it's interesting to see what the conversations are about. Check out the free programs available from <http://www.dxsoft.com/> <http://www.hotamateurprograms.com/>.

If you don't have access to a computer, all is not lost. It's still possible to learn as we all did in the old days, by listening to Morse practice sessions on the local repeater, or on the bottom end of 80 m if you have an HF receiver. Listen around between 3.550 and 3.650 MHz between 7 and 8 pm for a week, and you'll certainly hear some. They're easy to recognise because slow Morse is sent for a few minutes, followed by a "read-back" by the control station, and questions and comments by listeners.

How long, and how frequently, should you practice? Half an hour per day is fine. Some people find that before breakfast, when the mind is fresh, is better than in the evening. Others find that two or even three 20 minute sessions per day work best. In any case, stop when your mind begins to wander, or you feel you're getting overwhelmed.

When you can cope with 10–12 wpm, try to have at least a few contacts on the air. You may find that CW becomes quite fascinating. You'll begin to recognise the different morse rythms sent by straight keys, bugs, keyers and the keyboards of the high-speed merchants, and learn to recognise the distinctive "fists" of regular operators—which become as distinctive as voices.

You'll find that DX contacts with foreign stations are easy. Everybody has enough basic English for a CW contact, and many foreign stations operate almost exclusively on CW.

You'll also begin to find that you can read Morse faster than you can send it on a straight key. This is the time to invest in an electronic keyer and paddle, or download a computer "keyboard" program—there are several excellent free ones available.

THE FIRST CW QSO

by GARY BOLD ZL1AN

If you learned Morse from "plain language" English texts without doing much, or any, listening on the air, listening to *real* CW conversations is initially a perplexing experience. It takes some time to get used to the conventions, the Q codes, the abbreviations, the background noise, and the interference. After a while, however, you'll realise that the first few overs are usually very stylised, especially between stations who have not made contact before. The "standard information" (name, QTH, signal report, maybe power, rig, antenna) is always exchanged in a similar manner, and critical bits are always repeated. Only after a couple of overs does the conversation become less formal but even then most of us follow patterns.

How should you go about it? Here are some suggestions.

For the first QSO, it's a good idea to *arrange* a contact with some local who will send good, slow Morse, and have a strong enough signal to overcome the noise—which can be quite unsettling if you have listened only to noise-free code sent in practice sessions. And when you make contact, practise by sending the standard information just the way you would to an unknown operator.

Assume that I am calling you. Here is how the conversation might go. I have included the abbreviations you'll hear frequently, and which you'll need to become familiar with.

ZL1XYZ ZL1XYZ DE ZLIAN ZLIAN K

ZLIAN DE ZL1XYZ—GE OM ES TNX FER CALL—RST 589 589—NAME HR FRED FRED ES QTH HAMILTON HAMILTON HW? ZL1AN DE ZL1XYZ K

ZL1XYZ DE ZLIAN—GE FRED—RST 579 579—NAME HR GARY GARY ES QTH AUCKLAND AUCKLAND HW? ZL1XYZ DE ZLIAN K

ZLIAN DE ZL1XYZ—R—FB GARY—WX HR TODAY FINE ES TEMP 23—RG HR TS440 RUNNING 100W—ANT IS DIPOLE AT 10 METRES—HW? ZL1AN DE ZL1XYZ K

ZL1XYZ DE ZL1AN—R—FB FRED—HR WX COLD BUT NO RAIN—RIG HR YAESU FT767GX—PWR 50W—ANT ONLY END FED RANDOM WIRE WITH TUNER HI—BAND GUD TONITE—NO QRN OR QRM—HW? ZL1XYZ DE ZLIAN K

ZL1AN DE ZL1XYZ—R—FB GARY—TNX FER QSO—NW CUL ES 73 GARY GN OM—ZL1AN DE ZL1XYZ SK

dit dit dit dit

Now at 12 wpm those exchanges will have taken just over 10 minutes. That's plenty long enough for a start, so you can sign off gracefully. I guarantee you'll get a real buzz out of doing that!

Points to note

- Overs start and finish with the call-sign exchange, terminate with "K". Some operators insert "AR" before the last one, and finish with "KN"—which means "I don't want anybody to break in". But most of us enjoy having others enter our conversations.
- We used the most common standard abbreviations: GE, ON, ES, TNX, R FER, HR, HW, FB, WX, RIG, ANT, HI, W, GUD, NW, CUL, GN. "HI" is usually sent as "HEE". (dididit dit dit) If these are new to you, look them up in this *Call Book*. They'll rapidly become intuitive, and really save time.
- We used the most common Q-code and procedural signs QTH, QRM, QRN, QSO, RST.
- We exchanged information in a very stylised manner. Between friends or ragchewers conversations will be less formal. especially after the first few overs)but you won't go wrong proceeding in just this way, and many DX conversations sound just like this.
- We each ended with a pleasant "dit dit" to say goodbye—not necessary, but you'll often hear it. (Sometimes after an interesting conversation several other "dit dits" will sound, from phantom listeners who have been following the conversation.)

Almost everybody initially finds it difficult to "send from the head" instead of reading from a text as you will probably have been doing in practice. Therefore, write down the first few overs you'll send-at least in skeleton form, so you can send from the hard copy. You'll rapidly find that this becomes unnecessary also.

You'll also probably find it more natural to initially write down everything *received*, as you will have been doing. With experience you'll begin to "read in the head" and note down only call-signs, times, signal reports, names and items to comment on. Experienced operators write up the log as they go, but at first it's much easier to scribble details down on a scratch pad and complete the log carefully afterwards.

If the conversation continues longer, what do you say? CW operators talk about almost everything. Make two more lists: one of short phrases about your job, your age, your family, your other hobbies, other modes you operate. You should ask questions also: what is your job? Do you operate PSK31/MFSK16/RTTY? How long have you been a ham? This may seem very stilted, but it will get you going. After a while these memory joggers won't be necessary either.

On the DX bands you will often hear stations calling "CQ"—more common on CW than SSB these days. At some stage you will want to send one yourself. The "3×3" format is best, that is: CQ CQ CQ DE ZL1AN ZLIAN ZLIAN repeated three times, terminated with "K". Don't be one of those irritating people who send "CQ CQ ..." 25 times before giving a call-sign. Listeners get impatient and wander off. Short calls, repeated after a few seconds are best. If you call CQ, tune around a few kHz listening for answers, as somebody may have forgetfully left his RIT engaged, and be replying outside your passband.

When 40 m and above are open, DX contacts are easy since ZL stations are held to be quite rare and everybody is happy to talk to us. Such contacts are often quite short. Often you'll hear: "MY QSL SURE PS QSL VIA BURO" which means "I will certainly send you my QSL card, please send yours via the QSL bureau". Information regarding QSL Bureau procedure will be found elsewhere in the *Call Book*, and somebody at the local Branch will explain what to do.

If you answer a CQ the accepted polite thing to do is to send back at a speed no greater than that of the sending station—unless you know that the other operator is capable of higher speeds. If somebody answers you at speeds higher than you can comfortably receive, send back "PSE QRS 12 WPM"—or whatever speed you can copy. If the other station won't do this, just sign off gracefully and talk to somebody else. There are plenty of DX stations who send around this speed, and many, CQing faster, will gladly slow down to talk to you.

You will also hear conversations at higher speeds in the 20–30 wpm range. These operators generally use electronic keyers and send very good Morse. Listen to such contacts frequently and you'll find your reading speed slowly improves. Once you have the experience to operate in this range, you'll find contacts very enjoyable as a surprising amount of information can be passed at these speeds, and the Morse is better. If you have a PC with soundcard running at 133 MHz or better, download the excellent CW reading program, "CWget", written by Sergei, UA9OSV, from <http://www.dxsoft.com/> or "CWdecoder", written by Grant, WD6CNF, from <http://www.hotamateurprograms.com/>.

These require only a cable connecting the audio from the receiver to the soundcard input, and are straightforward to set up. Sergei provides a companion morse keyboard program, "CWtype", which interfaces with the transmitter keying circuit via a simple interface connected to a port, while Grant's program has this capability built in.

Morse keyboards are used because at higher speeds than these it becomes difficult for ordinary mortals to send accurately with any sort of keyer. You'll hear stations conversing at 35–50 wpm using such keyboards for sending, although they will almost invariably be reading in their heads. Once you can copy at these speeds, the Morse, being perfect, is a delight to copy-it just "decodes itself". Conversations at these speeds are typically much more in "plain language" with few abbreviations and included punctuation.

Come down and join the regulars on the bottom end of 80 metres! We'll be glad to talk to you!

The Amateur is Friendly ...

Slow and patient sending when requested, friendly advice and counsel to the beginner, kindly assistance, co-operation and consideration of the interests of others; these are the marks of the amateur spirit.

The Amateur's Code

ABBREVIATIONS FOR CW WORK

ABT	About
AGN	Again
ANT	Antenna
AR K	End of transmission
AR VA	Final end of transmission
AS	Wait
BCI	Broadcast interference
BCL	Broadcast listener
BK	Break; I wish to break-in (interrupt) a transmission in progress
BN	All between; been
BUG	Semi-automatic key
B4	Before
C	Yes
CL	I am closing my station; call
CPI, CPY	Copy
CQ	Calling any station
CUAGN	See you again
CUD	Could
CUL	See you later
CW	Continuous wave, i.e. radio telegraphy
DE	From
DR	Dear
DX	Distance, foreign countries
ER	Here
ES	And; &
FB	Fine business, excellent
FER	For
FM	Frequency modulation; From
GA	Go ahead, continue sending; good afternoon
GB	Goodbye
GE	Good evening
GG	Going; grounded grid
GM	Good morning
GN	Good night
GND	Ground
GUD	Good
HI	Laughter; High
HPE	Hope
HR	Here; Hear; Hour
HV: HVE	Have
HW	How
K	Go ahead
KN	specific station go ahead
MA; MILS	Milliamperes
MNI	Many
MSG	Message
N	No; North
NCS	Net control station
ND	Nothing doing
NIL	Nothing; I have nothing for you
NR	Number
NW	Now
OB	Old boy
OC	Old chap
OM	Old man
OP; OPR	Operator
OT	Old timer; Old top
PSE;	Please
PWR	Power
R	Received as transmitted; are (sometimes also used as a decimal point, e.g. 1R5)
RCVR; RX	Receiver
REF	Refer to; Referring to; Reference
RFI	Radio frequency interference
RIG	Station equipment
RPRT, REPT	Report
RPT	Repeat; I repeat
RTT; RTTY	Radioteletype
RX; RCVR	Receiver
SA	Say
SASE	Self-addressed, stamped envelope
SED	Said
SIG	Signal
SKED	Schedule
SRI	Sorry
SSB	Single sideband
SUM	Some
T	Zero (0)
THO	Though
THRU; THRO	Through
TMW	Tomorrow
TNX; TKS	Thanks
TT	That
TU; TKU	Thank you
TVI	Television interference
TX	Transmitter
TXT	Text
U	You
UR	Your; You are (sometimes YR)
URS	Yours (sometimes YRS)
VFO	Variable frequency oscillator
VY	Very
WID	With
WKD; WKG	Worked; Working
WL	Well; Will
WUD	Would
WX	Weather
XCVR	Transceiver
XMTR; TX	Transmitter
XTAL	Crystal
XYL; YF	Wife
YL	Young lady
73	Best Regards
88	Love and kisses

THE Q-CODE

QRG Will you tell me my exact frequency (or that of . . .)?
Your exact frequency (or that of . . .) is . . .kHz.

QRH Does my frequency vary?
Your frequency varies.

QRI How is the tone of my transmission?
The tone of your transmission is . . .
(1. Good; 2. Variable; 3. Bad)

QRK What is the intelligibility of my signals (or those of . . .)?
The intelligibility of your signals (or those of . . .) is . . .
(1. Bad; 2. Poor; 3. Fair; 4. Good; 5. Excellent)

QRL Are you busy?
I am busy (or I am busy with . . .) Please do not interfere.

QRM Is my transmission being interfered with?
Your transmission is being interfered with . . .
(1. Nil; 2. Slightly; 3. Moderately; 4. Severely; 5. Extremely)

QRN Are you troubled by static?
I am troubed by static . . .
(1–5 as under QRM)

QRO Shall I increase power?
Increase power.

QRP Shall I decrease power?
Decrease power.

QRQ Shall I send faster?
Send faster (. . . wpm).

QRS Shall I send more slowly?
Send more slowly (. . .wpm)

QRT Shall I stop sending?
Stop sending.

QRU Have you anything for me?
I have nothing for you.

QRV Are you ready?
I am ready.

QRW Shall I inform . . . that you are calling him on . . .kHz?
Please inform . . . that I am calling on . . .kHz.

QRX When will you call me again?
I will call you again at . . . hours (on . . .kHz).

QRZ Who is calling me?
You are being called by . . . (on . . .kHz)

QSA What is the strength of my signals (or those of . . .)?
The strength of your signals (or those of . . .) is . . .
(1. Scarcely perceptible; 2. Weak; 3. Fairly good; 4. Good; 5. Very good)

QSB Are my signals fading?
Your signals are fading.

QSD Are my signals mutilated?
Your signals are mutilated.

QSK Can you hear me between your signals and if so can I break in on your transmission?
I can hear you between my signals; break in on my transmission.

QSL Can you acknowledge receipt?
I am acknowledging receipt.

QSM Shall I repeat the last message I sent you, or some previous message?
Repeat the last message which you sent me [or message(s) number(s) . . .]

QSN Did you hear me (or . . .) on . . .kHz?
I did hear you (or . . .) on . . .kHz.

QSO Can you communicate with . . . direct or by relay?
I can communicate with . . . direct (or by relay through . . .)

QSP Will you relay to . . .?
I will relay to . . .

QST General call preceding a message addressed to all amateurs and ARRL members.

QSU Shall I send or reply on this frequency (or . . .kHz)?
Send or reply on this frequency (or . . .kHz).

QSV Shall I send a series of Vs on this frequency (or on . . .kHz)?
Send a series of Vs on this frequency (or on . . .kHz)

QSW Will you send on this frequency (or on . . .kHz)?
I am going to send on this frequency (or on . . .kHz)

QSX Will you listen to . . . on . . .kHz?
I am listing to . . . on . . .kHz.

QSY Shall I change to transmission on another frequency?
Change to transmission on another frequency (or on . . .kHz).

QSZ Shall I send each word or group more than once?
Send each word or group twice (or . . . times).

QTC How many messages have you to send?
I have . . . messages for you (or for . . .)

QTH What is your location?
My location is . . .
(QTHR—Location as per Call Book)

QTR What is the correct time?
The time is . . .

Morse Alphabet

A	• —	N	— •
B	— • • •	O	— — —
C	— • — •	P	• — — •
D	— • •	Q	— — • —
E	•	R	• — •
F	• • — •	S	• • •
G	— — •	T	—
H	• • • •	U	• • —
I	• •	V	• • • —
J	• — — —	W	• — —
K	— • —	X	— • • —
L	• — • •	Y	— • — —
M	— —	Z	— — • •

Numerals

1	• — — — —	6	— • • • •
2	• • — — —	7	— — • • •
3	• • • — —	8	— — — • •
4	• • • • —	9	— — — — •
5	• • • • •	0	— — — — —

Procedure Signals

Full stop	(.) • — • — • —
Comma	(,) — — • • — —
Colon	(:) — — — • • •
Question mark/Repeat	(?) • • — — • •
Apostrophe	(') • — — — — •
Hyphen/dash	(-) — • • • • —
Fraction bar	(/) — • • — •
Parenthesis (left hand)	(( ) — • — — •
Parenthesis (right hand)	( )) — • — — • —
Quotation marks	(") • — • • — •
Error	• • • • • • • •

Spacing and length of signal

1. A dash is equal to three dots.
2. The space between the signals which form the same letter is equal to one dot.
3. The space between two letters is equal to three dots.
4. The space between two words is equal to seven dots.

WORLD TIME CONVERSION CHART IN HOURS

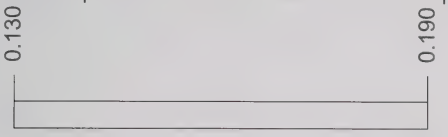
Greenwich Meridian Time, London, England	Central Europe, Berlin, Geneva, Stockholm, Vienna	Athens, Cape Town, Cairo	Arabia, Iraq, Eastern Europe, Moscow, Ethiopia, Malagasy	Mauritius, Oman, Reunion Island	Central Russia, Pakistan	Calcutta, Novosibirsk Russia, Bangladesh	Laos, Sumatra, Thailand	Philippine Islands Perth Australia	Central Australia, Tokyo Japan	Eastern Australia, Melbourne, Sydney	New Caledonia	International Date Line, Fiji Islands, New Zealand Standard Time	Nome, Alaska, Samoa, Midway Islands	Hawaiian Islands	Eastern Alaska, Dawson	Pacific Standard Time, Los Angeles, Seattle, Juneau	Mountain Standard Time, Calgary, Denver, Phoenix	Central Standard Time, Chicago, Costa Rica	Eastern Standard Time, Montreal, New York, Peru	Atlantic Standard Time, Chile, Nova Scotia	Greenland, Rio de Janiero, Brazil	Fernando de Horonha	Azores, Cape Verde
0000	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm
0100	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm	Mid Night
0200	3am	4am	5am	6am	7am	8am	9am	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm	Mid Night	1am
0300	4am	5am	6am	7am	8am	9am	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm	Mid Night	1am	2am
0400	5am	6am	7am	8am	9am	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm	Mid Night	1am	2am	3am
0500	6am	7am	8am	9am	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm	Mid Night	1am	2am	3am	4am
0600	7am	8am	9am	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm	Mid Night	1am	2am	3am	4am	5am
0700	8am	9am	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm	Mid Night	1am	2am	3am	4am	5am	6am
0800	9am	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm	Mid Night	1am	2am	3am	4am	5am	6am	7am
0900	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm	Mid Night	1am	2am	3am	4am	5am	6am	7am	8am
1000	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm	Mid Night	1am	2am	3am	4am	5am	6am	7am	8am	9am
1100	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm	Mid Night	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am
1200	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm	Mid Night	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am
1300	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm	Mid Night	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	Noon
1400	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm	Mid Night	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	Noon	1pm
1500	4pm	5pm	6pm	7pm	8pm	9pm	10pm	11pm	Mid Night	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	Noon	1pm	2pm
1600	5pm	6pm	7pm	8pm	9pm	10pm	11pm	Mid Night	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	Noon	1pm	2pm	3pm
1700	6pm	7pm	8pm	9pm	10pm	11pm	Mid Night	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	Noon	1pm	2pm	3pm	4pm
1800	7pm	8pm	9pm	10pm	11pm	Mid Night	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm
1900	8pm	9pm	10pm	11pm	Mid Night	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm
2000	9pm	10pm	11pm	Mid Night	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm
2100	10pm	11pm	Mid Night	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm
2200	11pm	Mid Night	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm
2300	Mid Night	1am	2am	3am	4am	5am	6am	7am	8am	9am	10am	11am	Noon	1pm	2pm	3pm	4pm	5pm	6pm	7pm	8pm	9pm	10pm

AMATEUR RADIO BAND USAGE

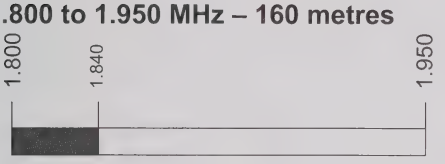
These charts show the New Zealand bandplans.
These bandplans are to ensure that your transmissions do not impose problems on other operators and that their transmissions do not impact on you.
It is to the advantage of all operators that the published bandplans be used.
The Ministry of Economic Development (MED) defines the band limits, while the internal band segments are derived from the IARU Region 3 bandplans with New Zealand adaptations.
The band limits are found in "Schedule 3" (attached to each amateur radio licence) and on the NZART web site in the Study Guide (Regulations). (see note 1 below for URL)
The Region 3 bandplans are at the IARU Region 3 web site. (see note 2 below for URL)

130 to 190 kHz – 1800 metres

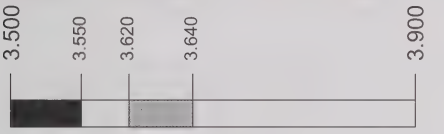
Radiated power must not exceed 5 watts e.i.r.p.



1.800 to 1.950 MHz – 160 metres

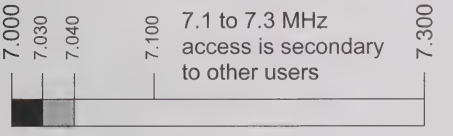


3.500 to 3.900 MHz – 80 metres

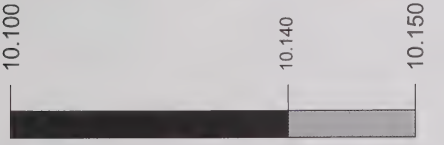


7.000 to 7.300 MHz – 40 metres

Amateur satellite service permitted 7.0-7.1 MHz



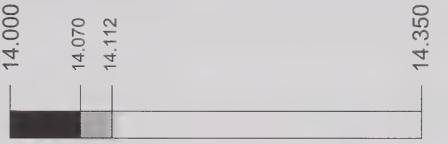
10.100 to 10.150 MHz – 30 metres



Note 1: NZART web site:
http://www.nzart.org.nz/nzart/exam/
Note 2: IARU Region 3 web site:
http://www.jarl.or.jp/iaru-r3/r3bandplan.doc

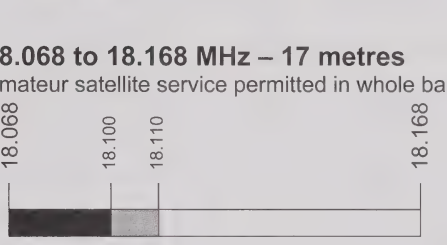
14.000 to 14.350 MHz – 20 metres

Amateur satellite service permitted 14.00-14.25 MHz



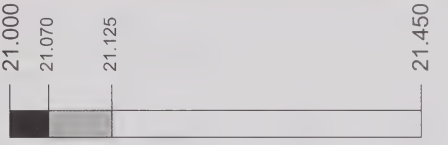
18.068 to 18.168 MHz – 17 metres

Amateur satellite service permitted in whole band



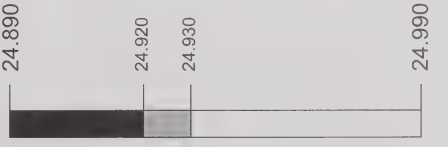
21.000 to 21.450 MHz – 15 metres

Amateur satellite service permitted in whole band



24.890 to 24.990 MHz – 12 metres

Amateur satellite service permitted in whole band



KEYS

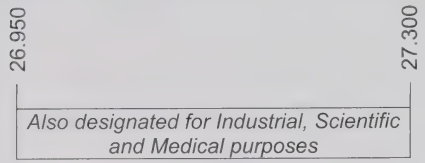
- ■ = CW or modes less than 1 kHz bandwidth
- □ = All modes with bandwidth less than 6 kHz
- ▒ = Data/packet, less than 6 kHz bandwidth

Prepared by Jamie Pye ZL2NN May 2006
Updates or Comment to: zl2nn@nzart.org.nz
For the latest listings see: 8/18/2006 8:25 AM
http://www.nzart.org.nz/nzart/Repeaters/

NEW ZEALAND AMATEUR RADIO BANDPLANS

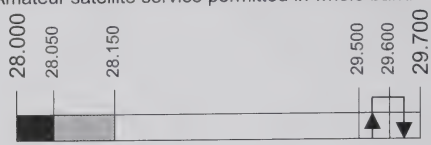
26.950 to 27.300 MHz – 11 metres

Telemetry or telecontrol only, 5 W e.i.r.p. maximum



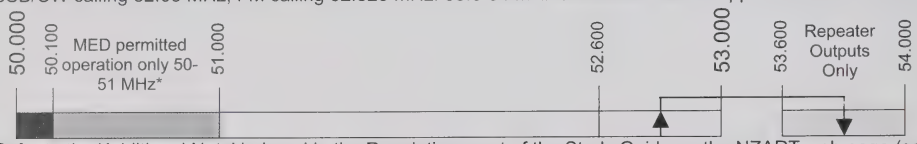
28.000 to 29.700 MHz – 10 metres

Amateur satellite service permitted in whole band



51.000 to 53.000 MHz – 6 metres

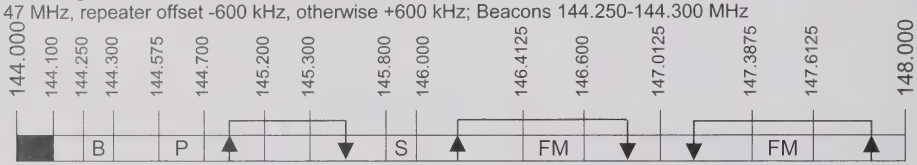
SSB/CW calling 52.05 MHz, FM calling 52.525 MHz. 53.6-54 MHz available for MED approved fixed transmitters



Refer to the 'Additional Note' indexed in the Regulations part of the Study Guide on the NZART web page (see note 1 at the bottom of page 1, of these bandplans, for the Internet address)

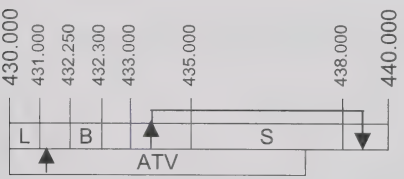
144.000 to 148.000 MHz – 2 metres

Amateur satellite service permitted in the range 144-146 MHz. Oceania SSB calling 144.1 MHz, ZL calling 144.2 MHz, FM calling 144.5 and 146.475 MHz. Primary packet/digipeater 144.65 MHz, other frequencies available. Below 147 MHz, repeater offset -600 kHz, otherwise +600 kHz; Beacons 144.250-144.300 MHz



430.000 to 440.000 MHz – 70 cm

Amateur satellite permitted in the range 435-438 MHz. SSB calling 432.2 MHz, FM calling 432.5 MHz, Beacons 432.25-432.30 MHz. Primary packet/digipeater 432.65 MHz, other frequencies available. Repeater offsets -5 MHz in most cases, +5 MHz otherwise. In general, the ATV repeaters have an input frequency of 431.250 MHz vision, 436.750 MHz FM sound and 437.100 MHz NICAM sound



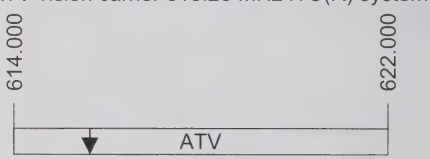
KEYS

- ▲ = Repeater input band segment
- ▼ = Repeater output band segment
- ▬ = CW or modes less than 1 kHz bandwidth
- ▭ = All modes
- ▬ = Data/packet, less than 6 kHz bandwidth
- ▭ = Repeater outputs only

ATV = Amateur Television, S = Satellites,
B = Beacons, P = Packet, FM = FM simplex,
L = Link

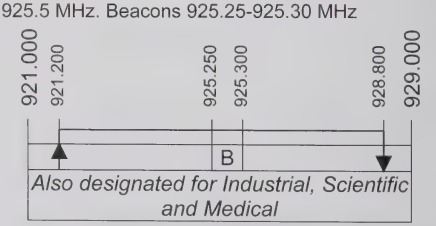
614.000 to 622.000 MHz – 50 cm

ATV vision carrier 615.25 MHz ITU(R) system G



921.000 to 929.000 MHz – 32 cm

Power 25 W e.i.r.p., SSB calling 925.2 MHz, FM calling 925.5 MHz. Beacons 925.25-925.30 MHz



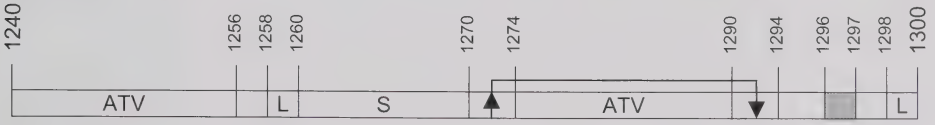
To find the narrow band segment bandplan for the microwave bands, please look for *Simplex and Calling Frequencies* that can be found elsewhere in this Call Book

Prepared by Jamie Pye ZL2NN May 2006
Updates or Comment to: zl2nn@nzart.org.nz
For the latest listings see: 8/18/2006 8:24 AM
http://www.nzart.org.nz/nzart/Repeaters/

NEW ZEALAND AMATEUR RADIO BANDPLANS

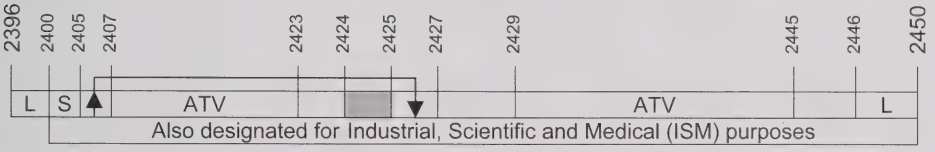
1240 to 1300 MHz – 23 cm

SSB calling 1296.2 MHz, FM calling 1296.5 MHz. Beacons 1296.25-1296.30 MHz. ATV video carriers 1241.25, 1249.25, 1275.25 and 1283.25 MHz ITU(R) system G. Repeaters -20 MHz offset. Amateur satellite service in band 1260- 1270 MHz, uplink only

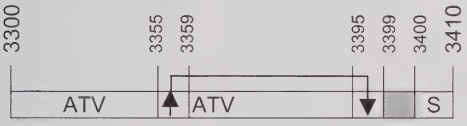


2396 to 2450 MHz – 12 cm

Standard 1 MHz narrow band segment 2424-2425 MHz. SSB calling 2424.2 MHz, FM calling 2424.5 MHz. Beacons 2424.25-2424.30 MHz. ATV in segments 2408-2422 and 2432-2446 MHz, ITU(R) system B. Repeaters -20 MHz offset. Amateur satellite service in 2400-2450 MHz. 2400-2450 MHz is also designated for Industrial, Scientific and Medical (ISM) purposes

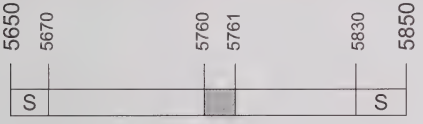


3300 to 3410 MHz – 9 cm

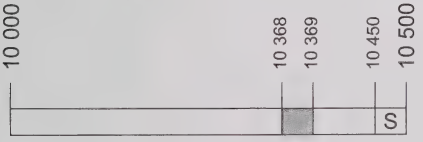


5650 to 5850 MHz – 5 cm

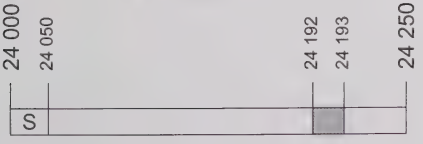
Satellites 5650-5670 MHz earth-to-space only;
5830-5850 MHz space-to-earth only



10 000 to 10 500 MHz – 3 cm

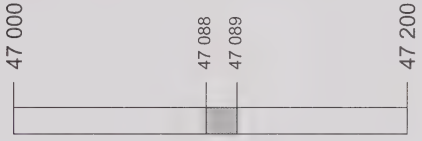


24 000 to 24 250 MHz – 1.2 cm



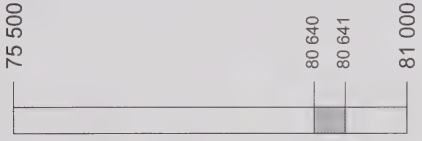
47 000 to 47 200 MHz – 6 mm

Amateur satellite available on the entire band



75 500 to 81 000 MHz – 4 mm

Amateur satellite available on the entire band



KEYS

▲ = Repeater input band segment
▼ = Repeater output band segment
▭ = All modes
▬ = Standard 1 MHz narrow band segment

ATV = Amateur Television, S = Satellites,
L = Link

NOTE: Plans are in development for bands above 122.25 GHz

To find the narrow band segment bandplan for the microwave bands, please look for *Simplex and Calling Frequencies* that can be found elsewhere in this Call Book

Prepared by Jamie Pye ZL2NN May 2006
Updates or Comment to: zl2nn@nzart.org.nz
For the latest listings see: 8/18/2006 8:23 AM
http://www.nzart.org.nz/nzart/Repeaters/

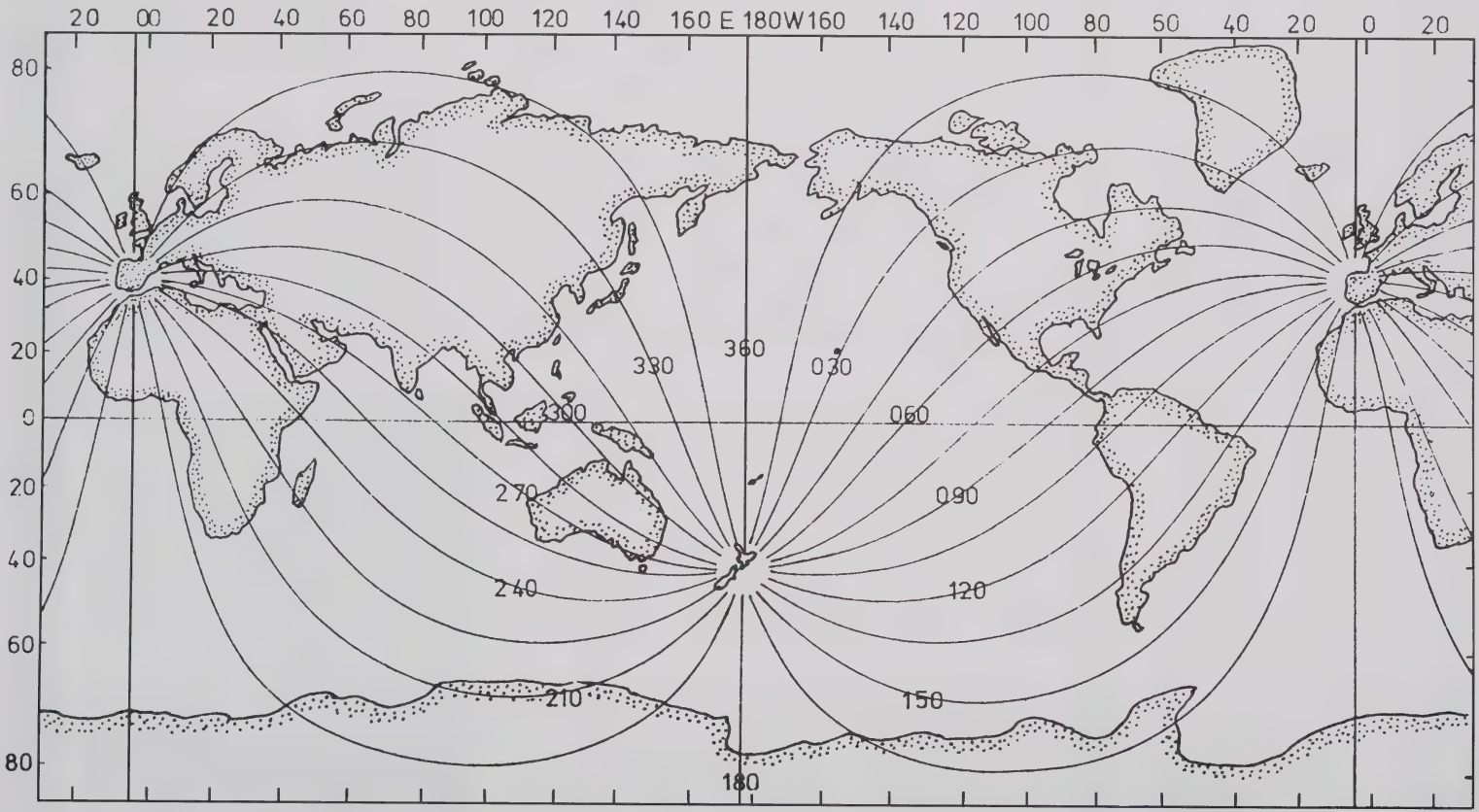
Great Circle DX Bearings Based on Wellington

prepared by RON MURPHY ZL1AMM

Listed below are the approximate short path bearings based on the great circle map centred on Wellington. These listings, based on true north, will point your directional antenna in the appropriate direction before final adjustment depending on the sharpness to which the antenna was installed. The long path bearings are about 180 degrees in the opposite direction.

A good inexpensive Azimuth (great circle on Wellington) map, number NZMS 47, is obtainable from metropolitan offices of the Department of Survey and Land Information. Available from overseas are several computer-derived DX beam headings.

A2	210	FJ, FS	100	KH2	320	S9	205	VU	270	3V	250
A3	20	FK	340	KH3	20	SM, SK, SL	330	VU7A	285	3W, XV	295
A4	270	FM	95	KH4	N	SP	310	VU7L	275	3X	155
A5	295	FO	60	KH5, KH5K	30	ST, ST0	250			3Y, Bouvet	185
A6	275	FP	65	KH6	25	SU	260	W, K, N, A	60	3Y, Peter I	155
A7	275	FR	235	KH7	N	SV, J4	270				
A9	275	FS	100	KH8	20			XE	70	4E7, DU	310
A, K, N, W	60	FT5W	220	KH9	350	T2	N	XF4	70	4J	330
AP	280	FT5X	225	KH0	320	T30	N	XT	180	4K2/FJL	N
		FT5Y	180	KL	15	T31	20	XU	295	4K5–9	290
BS7H, BS0H	290	FT5Z	230	KP1	90	T32	30	XV, 3W	295	4L	290
BV9P	310	FW	N	KP2	90	T33	N	XW	295	4K0	330
BV, BO	315	FY	115	KP3, KP4	90	T5	245	XX	305	4S	280
BY, BA, BD, BG	315			KP5	90	T7	280	XY, XZ	290	4U/ITU	300
		G, GX	345	KX	350	T8	320			4U/UN	65
C2	N	GD, GT	5			T9	285	YA	290	4W	255
C3	280	GI, GN	15	LA	335	TA	280	YB, YC, YD	300	4X, 4Z	265
C5	155	GJ, GH	345	LU	135	TF	15	YI	270		
C6	95	GM, GS	N	LX	325	TG	90	YJ	330	5A	260
C9	230	GU, GP	345	LY	320	TI	90	YK	270	5B	270
CE	130	GW, GC	350	LZ	285	TI9	90	YL	320	5H	230
CE0	110, 120					TJ	205	YN	90	5N	195
CO	80	H4	335	M, MX	345	TK	230	YO	285	5R	225
CN	220	HA	300	MD	5	TL	205	YS	90	5T	160
CP	125	HB	300	MI	15	TN	210	YU1, 6, 7, 8	285	5U	175
CT	130	HB0	300	MJ	345	TR	200	YV	100	5V	175
CT3	140	HC	100	MM	N	TT	220	YV0	100	5W	20
CU2, CT2	90	HC8	90	MU	345	TU	160			5X	235
CX	140	HH	90	MW	350	TY	190	ZA	275	5Z	235
CY9, 0	65	HI	90			TZ	160	ZB	180		
		HK	100	N, K, W, A	60			ZC	270	6W	150
D2, 3	210	HK0	90	OA	110	UA-UI, R	320	ZD7	180	6Y	90
D4	150	HL	325	OD	275	UJ-UM	290	ZD8	170		
D6	230	HP	90	OE	305	UN-UQ	290	ZD9	170	7O	255/275
DA to DR	320	HR	90	OH, OJ	330	UR-UZ, EM-EO	300	Z2	220	7P	220
DU, 4E7	310	HS, E2	285	OK, OL, OM	310			Z3	285	7Q	230
		HV	280	ON	330	V2	95	ZF	90	7X	240
E2, HS	285	HZ, 7Z	260	OX	20	V3	85	ZK1N	50	7Z, HZ	260
E3	245			OY	N	V4	95	ZK1S	60		
EA	260	I	280	OZ	330	V5	200	ZK2	N	8P	90
EA6	250	IS	270			V6	320	ZK3	30	8Q	275
EA8	140			P2	310	V7	350	ZL7	110	8R	110
EA9	180	J2	245	P4	95	V85	290	ZL8	30		
EI	10	J3	95	P5	325	VE	50	ZL9	190	9A	285
EK	290	J4, SV	270	PA	330	VK	280	ZP	125	9G	185
EL	180	J5	155	PJ	95	VK9C	270	ZS	210	9H	250
EM-EO, UR-UZ	300	J6	95	PJ7	90	VK9L	290	ZS8	210	9I, 9J	220
EP	280	J7	95	PY	140	VK9M	330			9K	270
ER	285	J8	95	PY0	125, 145	VK9N	340	1A0	280	9L	165
ES	320	JA	335	PZ	100	VK9W	320	1S	285	9M2, 4	285
ET, 9F	245	JD	335			VK9X	275			9M6, 8	285
EU, EV, EW	310	JT	325	RA	see UA	VK0H	220	3A	295	9N	295
EX	290	JW	5	R1A	180	VK0M	210	3B6	235	9Q	230
EY	290	JX	5	R1F	N	VP2	95	3B7	235	9U	230
EZ	290	JY	265	R1M	330	VP5	95	3B8	235	9V	285
						VP8	150, 180	3B9	230	9X	230
F	310	K, N, A, W	60	S0	140	VP9	80	3C	205	9Y	100
FC	230	KC6	320	S2	290	VQ9	265	3C0	205		
FG	100	KG4	90	S5	285	VR2, VS9	305	3D2	N		
FH	230	KH1	15	S7	240	VR6	90	3DA0	220	Antarctica	180



GREAT CIRCLE BEARINGS FROM WELLINGTON.

Information provided by
TREVOR KING
ZL2AKW

QRP operation has a long history in New Zealand, not only with home stations and DX successes, but also for portable use in the backcountry.

The origins

QRP is an abbreviation from the official list of Q-codes that were developed to speed up communication, especially between stations that spoke different languages. These codes go back to the days of Spark transmitters.

QRP? = Shall I decrease transmitter power?

QRP, with no question mark = Decrease transmitter power!

How much is QRP?

These days it is much easier to measure output power than perform meaningful and accurate input calculations.

In amateur radio circles QRP means operating a transmitter at a level of 5 W Radio Frequency power output, or less, on any frequency, using any mode. QRPP stations operate with a power output that is less than 1 W.

Sources

Traditionally QRP gear has been home made, and many hams still build their own QRP equipment and accessories. This can be achieved using tried and tested designs in kitset format, a few prefer to design a unit following first principles and fabricate it from available components.

Others enjoy restoring and reactivating low-power war surplus equipment from the 1940s such as the ZC1 transmitter and receiver unit, designed and built here in New Zealand.

There exist knowledgeable Amateur Operators able to recreate 1920s and 1930s equipment from hoarded vintage parts. You can detect who these persons are by their ruthless bidding at Junk Sales.

For the "busy professional" person, commercially built QRP transmitting and receiving equipment is readily available. The introduction of new and sometimes innovative designs from major players makes this an attractive path for those of us who have the money to invest.

Forum

Break-In has a regular QRP column to cater for this interest. Back issues of this long running magazine contain many articles on all aspects of QRP equipment and operation.

Events

The premier event for ZL QRP operators is the Sangster Shield.

The photograph shows the person responsible for the Chelmsford QRP Transceiver, Mike Kerr ZL2BCW. Mike is depicted holding the rig that won the Sangster Shield Contest in 1984 for the late Rod Blagdon ZL2OM.

This Chelmsford Transceiver was featured in the November 1983 issue of *Break-In*. The Collins rig *circa* 1934, on the right hand side of the photograph, is an example of vintage QRO from the Golden Age of radio.

Most Contests, including our own Jock White Memorial Field Day, have a QRP category and provide an incentive for participation. In addition, Straight Key Night and Vintage Radio events like SPAM Military Radio Day attract QRP enthusiasts.

Informal nets that take place on 80 and 40 m bands frequently include skilled operators running QRP outputs. Much of the handheld equipment utilised on VHF and UHF is QRP, more than sufficient to trigger the repeaters. At a more informal level, there are Teddy Bear's picnics, occasions when portable gear is given a day in the country and food and liquid items are liberated. These events are more popular in the warmer months.

The Challenge of QRP

A two-way QRP contact provides the ultimate goal. Anyone can work DX with high power, even using a mediocre antenna system. The successful QRP operator adds operating skills and good practices to produce a successful outcome.

One advantage many of us have is that interference of all kinds is generally lower than overseas, although New Zealand is catching up, with the proliferation of poorly designed appliances using switching-mode power supplies. ZL operators provide a "real QRP DX contact" for overseas amateurs so a weak signal may still be considered worth the effort.

Fudging The Edges

There are many individual interpretations of what constitutes QRP, but one thing that every QRPer agrees with, QRP operation provides "*joie de vivre*" to the practitioner of amateur radio.

CHANGE OF ADDRESS NOTIFICATION

Please send to the Business Manager any details of your new address to retain your membership benefits, including the automatic inclusion of your details in Call Book (published annually).

If you DO NOT wish your details to be published please indicate this fact clearly.

REMEMBER: If you change your address you mustnotify the nearest office of the Ministry of Economic Development (Radio Spectrum Management), AND the Business Manager NZART.

Prepared by the late
JOHN GÁBITES
ZL2AQ

Communication with neighbouring stations by ground waves is not affected by conditions in the upper atmosphere. In contrast all HF communications beyond, at the most, a few tens of kilometres depend on the presence of a layer of gases so strongly ionized as to act as a reflector for skywave signals. These signals projected at the correct angle, will be directed down to the desired destination, either in one hop or by successive hops around the curvature of the earth.

The ionization of the atmospheric gases is renewed each day by ultra-violet radiation from the sun. In the lowest layers (D and E) the density of ions decreases rapidly as the sun goes down, but in the higher F region the ionization lasts longer and diminishes slowly through the night. The strength of the ionizing radiation itself is liable to fluctuate from day to day and week to week. Observatories monitor the state of the ionosphere by sweeping through the HF spectrum with pulses directed vertically upward, timing the echoes to determine the virtual height of the reflecting layer, and noting the critical penetration frequency (f0) above which reflections cease.

Radio waves impinging obliquely on the ionized layer can be reflected on higher frequencies that are related to f0 by an obliquity factor. Thus, for example, with an F layer at 300 km, the required radiation angle above the horizon and the maximum usable frequency (MUF) for various distances would be:

0 km	90°	$1.0 \times f_0$
500 km	48°	$1.3 \times f_0$
1,000 km	28°	$1.9 \times f_0$
2,000 km	14°	$2.7 \times f_0$
3,000 km	4°	$3.4 \times f_0$

For instance, when the critical frequency (f_0) is 3 MHz the MUF for a 1000 km path is 1.9×3 MHz = 5.7 MHz. This path would be useable on 40 m (MUF = 7 MHz) if the critical frequency increased to $7 \div 1.9 = 3.7$ MHz.

Signals suffer power loss at every reflection and at every passage through the daytime D and E regions. The lower the frequency the more severe the loss—halving the frequency quadruples the loss. The lowest frequency to give a readable signal at the other end, in spite of losses, depends in part on the effective power radiated at the appropriate angle. Thus the lowest usable frequency (LUF) or absorption-limited frequency (ALF) is not a sharply defined limit applying to all stations like the MUF.

The IARU-NCDXF[1] worldwide network of beacons in continuous operation on five amateur bands, and cycling through four power levels, provides a convenient means of sampling current propagation conditions to other parts of the world (see Figure 1 overleaf). The full 18-beacon sequence on any band can be scanned in only three minutes.

For planning ahead it is usual to make use of predictions of the MUF and LUF based on the historical data provided by ionospheric observatories and averaged for different levels of solar activity. For a long time the main indicator of solar activity was the sunspot number, but the measurements of microwave radiation from the sun, begun at Ottawa in 1946, have proved more relevant to ionospheric conditions. The solar flux index is the measurement made at local noon (now at Penticton, British Colombia) on 2.8 GHz.[2] This is not the ionizing radiation, but is something measurable at the ground that seems to vary in parallel with the ionizing radiations that maintain the ionosphere.

If an estimate can be made of the level of solar activity likely to apply at the time of interest, computers can sort through the world maps of averaged past data and extract the most probable MUFs at the required reflection points, at the relevant time, month and activity level. With considerable simplification, some very convenient programs have been produced for PCs.[3] Most try to predict median values of MUF for a path, but to allow for the normal day-to-day variations of ionospheric conditions over a month many also indicate the expected upper decile (UD) value of MUF (likely to be exceeded on about 10 per cent of days) and the lower decile (LD) values (below which the MUF is likely to fall on the worst 10 per cent of days). Commercial stations normally set their frequencies some distance below the expected median MUFs to minimize the disruptions of schedules on "bad" days, and for this purpose often designate the LD as their optimum working frequency (OWF). This, however, is a compromise frequency—the best propagation is normally to be found just below the actual MUF at the time, which on a "good" day may be 15 per cent or more above the predicted median MUF. Although predictions of median MUFs such as those in Break-In may not always fit conditions on particular days very well, the predictions will still give useful indications of the best and worst times to try to communicate with distant places.

Most HF communications within New Zealand are by single-hop sky wave, requiring a medium to high take-off angle. Most amateur contacts need radiation angles above 40–45°, few need radiation below 30° to reach the remainder of the country. At the steep angles needed for nearby communications, signals on the higher frequency bands will penetrate the ionized layers and be lost to space, though lower-angled rays may still be reaching more distant stations. This skip over surrounding areas is most frequent and extensive when the ionization is weak, notably at night, in the winter, and in the years of low solar activity. Amateurs (including AREC) can usually keep nearby contacts on the 3.5 MHz band, while SAR and CD can change to their lower "night" frequencies. In contrast to local communications, long distance contacts are favoured by the lowest practicable radiation angles in order to maximuze the usable frequency, minimize the number of hops needed, and avoid unnecessary absorption losses.

Bursts of X-rays from solar flares can cause immediate intensifiction of ionization, notably in the D-region, over sunlit portions of the earth, causing sudden shortwave fadeouts. Clouds of charged particles ejected from the sun, and travelling more slowly, may be reported by satellite as a satellite proton event (SPE); they can interact with the earth's magnetic field, causing distortions of the field that are indicated by increases in the three-hourly geomagnetic K-index and the 24-hourly A-index, and themselves be deflected towards the magnetic poles to produce enhanced auroral displays, degraded radio propagation across the auroral zone, and perhaps severe polar cap absorption (PCA).[4]

Summary

For long distance contacts use the lowest practicable radiation angle and the highest frequency usable at the time; listen to the beacons for an overview of propagation in different directions (and take great care not to transmit on the beacon frequencies!); listen to the hourly broadcasts from WWV or WWVH for the solar flux and K and A indices (and do not expect great propagation across the auroral regions if the geomagnetic field is disturbed); consult monthly predictions of median MUFs in Break-In or on PCs but be prepared for MUFs to be 15 per cent or more above the predicted medians on good days and 15 per cent or more below on bad days.

For domestic communications within New Zealand expect to do best with a medium to high radiation angle and a frequency low enough to avoid skip over the desired paths, but still use the highest band that is usable in order to minimize losses and multipath fading.

Useful websites (many cross-linked)

(1) The Northern California DX Foundation website (<www.ncdxf.org>) has pages on beacons, including sites, call-signs, schedules, propagation software and software to monitor the beacons using a sound card.

(2) The Penticton/Ottawa 2.8 GHz solar flux observations are displayed on <www.ngdc.noaa.gov/stp/SOLAR/FLUX/flux.html> (note the uppercase letters).

(3) Propagation prediction software is available through links on the NZART website (<www.nzart.org.nz/nzart/ar_ww/other.htm>1) the NCDX site above and most other sites in this list.

(4) "Space weather" is the current jargon for solar activity and its influence on the earth. The website <www.spaceweather.com >(sponsored by NASA) has a lot of current and background information as well as links to other sites, the principal one being the Space Environment Center of the US National Oceanic and Atmospheric Administration (<www.sec.noaa.gov>) which is the major source of data used by other sites.

Learning about propagation

The RSGB Propagation Studies Committee has a very comprehensive website at <www.keele.ac.uk/depts/por/psc.html> with a listing "relating to radio propagation at all levels from introductory to professional". (There "what's new?" section includes two articles by Murray Greenman ZL1BPU.)

Two ionospheric organisations who are responsible for collecting ionospheric observations also have very good education sections on propagation. They are <www.sec.noaa.gov> (see above) and the Australian Ionospheric Prediction Service (<www.ips.gov/au>).

The NZART website has a link to the on-line data (the latest hourly ionogram) from the Eyrewell ionosonde near Christchurch (<www.phys.canterbury.ac.nz/~physion/ionogram.html>).

Additional material by Grahame Fraser ZL3SJ

ALLOCATION OF INTERNATIONAL CALL-SIGNS

AAA-ALZ	United States of America
AMA-AOZ	Spain
APA-ASZ	Pakistan (Islamic Republic of)
ATA-AWZ	India (Republic of)
AXA-AXZ	Australia
AYA-AZZ	Argentine Republic
A2A-A2Z	Botswana (Republic of)
A3A-A3Z	Tonga (Kingdom of)
A4A-A4Z	Oman (Sultanate of)
A5A-A5Z	Bhutan (Kingdom of)
A6A-A6Z	United Arab Emirates
A7A-A7Z	Qatar (State of)
A8A-A8Z	Liberia (Republic of)
A9A-A9Z	Bahrain (State of)
BAA-BZZ	China (People's Republic of)
CAA-CEZ	Chile
CFA-CKZ	Canada
CLA-CMZ	Cuba
CNA-CNZ	Morocco (Kingdom of)
COA-COZ	Cuba
CPA-CPZ	Bolivia (Republic of)
CQA-CUZ	Portugal
CVA-CXZ	Uruguay (Eastern Republic of)
CYA-CZZ	Canada
C2A-C2Z	Nauru (Republic of)
C3A-C3Z	Andorra (Principality of)
C4A-C4Z	Cyprus (Republic of)
C5A-C5Z	Gambia (Republic of the)
C6A-C6Z	Bahamas (Commonwealth of the)
C7A-C7Z	World Meteorological Organization
C8A-C9Z	Mozambique (Republic of)
DAA-DRZ	Germany (Federal Republic of)
DSA-DTZ	Korea (Republic of)
DUA-DZZ	Philippines (Republic of the)
D2A-D3Z	Angola (Republic of)
D4A-D4Z	Cape Verde (Republic of)
D5A-D5Z	Liberia (Republic of)
D6A-D6Z	Comoros (Islamic Federal Republic of the)
D7A-D9Z	Korea (Republic of)
EAA-EHZ	Spain
EIA-EJZ	Ireland
EKA-EKZ	Armenia (Republic of)
ELA-ELZ	Liberia (Republic of)
EMA-EOZ	Ukraine
EPA-EQZ	Iran (Islamic Republic of)
ERA-ERZ	Moldova (Republic of)
ESA-ESZ	Estonia (Republic of)
ETA-ETZ	Ethiopia (Federal Democratic Republic of)
EUA-EWZ	Belarus (Republic of)
EXA-EXZ	Kyrgyz Republic
EYA-EYZ	Tajikistan (Republic of)
EZA-EZZ	Turkmenistan
E2A-E2Z	Thailand
E3A-E3Z	Eritrea
E4A-E4Z	Palestinian Authority
E5A-E5Z	New Zealand - Cook Islands
FAA-FZZ	France
GAA-GZZ	United Kingdom of Great Britain and Northern Ireland
HAA-HAZ	Hungary (Republic of)
HBA-HBZ	Switzerland (Confederation of)
HCA-HDZ	Ecuador
HEA-HEZ	Switzerland (Confederation of)
HFA-HFZ	Poland (Republic of)
HGA-HGZ	Hungary (Republic of)
HHA-HHZ	Haiti (Republic of)
HIA-HIZ	Dominican Republic
HJA-HKZ	Colombia (Republic of)
HLA-HLZ	Korea (Republic of)
HMA-HMZ	Korea (Democratic People's Republic of)
HNA-HNZ	Iraq (Republic of)
HOA-HPZ	Panama (Republic of)
HQA-HRZ	Honduras (Republic of)
HSA-HSZ	Thailand
HTA-HTZ	Nicaragua
HUA-HUZ	El Salvador (Republic of)
HVA-HVZ	Vatican City State
HWA-HYZ	France
HZA-HZZ	Saudi Arabia (Kingdom of)
H2A-H2Z	Cyprus (Republic of)
H3A-H3Z	Panama (Republic of)
H4A-H4Z	Solomon Islands
H6A-H7Z	Nicaragua
H8A-H9Z	Panama (Republic of)
IAA-IZZ	Italy
JAA-JSZ	Japan
JTA-JVZ	Mongolia
JWA-JXZ	Norway
JYA-JYZ	Jordan (Hashemite Kingdom of)
JZA-JZZ	Indonesia (Republic of)
J2A-J2Z	Djibouti (Republic of)
J3A-J3Z	Grenada
J4A-J4Z	Greece
J5A-J5Z	Guinea-Bissau (Republic of)
J6A-J6Z	Saint Lucia
J7A-J7Z	Dominica (Commonwealth of)
J8A-J8Z	Saint Vincent and the Grenadines
KAA-KZZ	United States of America
LAA-LNZ	Norway
LOA-LWZ	Argentine Republic
LXA-LXZ	Luxembourg
LYA-LYZ	Lithuania (Republic of)
LZA-LZZ	Bulgaria (Republic of)
L2A-L9Z	Argentine Republic
MAA-MZZ	United Kingdom of Great Britain and Northern Ireland
NAA-NZZ	United States of America
OAA-OCZ	Peru
ODA-ODZ	Lebanon
OEA-OEZ	Austria
OFA-OJZ	Finland
OKA-OLZ	Czech Republic
OMA-OMZ	Slovak Republic
ONA-OTZ	Belgium
OUA-OZZ	Denmark
PAA-PIZ	Netherlands (Kingdom of the)
PJA-PJZ	Netherlands (Kingdom of the) - Netherlands Antilles
PKA-POZ	Indonesia (Republic of)
PPA-PYZ	Brazil (Federative Republic of)
PZA-PZZ	Suriname (Republic of)
P2A-P2Z	Papua New Guinea
P3A-P3Z	Cyprus (Republic of)
P4A-P4Z	Netherlands (Kingdom of the) - Aruba
P5A-P9Z	Korea (Democratic People's Republic of)
RAA-RZZ	Russian Federation
SAA-SMZ	Sweden
SNA-SRZ	Poland (Republic of)
SSA-SSM	Egypt (Arab Republic of)
SSN-STZ	Sudan (Republic of the)
SUA-SUZ	Egypt (Arab Republic of)
SVA-SZZ	Greece
S2A-S3Z	Bangladesh (People's Republic of)
S5A-S5Z	Slovenia (Republic of)
S6A-S6Z	Singapore (Republic of)
S7A-S7Z	Seychelles (Republic of)
S8A-S8Z	South Africa (Republic of)
S9A-S9Z	Sao Tome and Principe (Democratic Republic of)
TAA-TCZ	Turkey
TDA-TDZ	Guatemala (Republic of)
TEA-TEZ	Costa Rica
TFA-TFZ	Iceland
TGA-TGZ	Guatemala (Republic of)
THA-THZ	France
TIA-TIZ	Costa Rica
TJA-TJZ	Cameroon (Republic of)
TKA-TKZ	France
TLA-TLZ	Central African Republic
TMA-TMZ	France
TNA-TNZ	Congo (Republic of the)
TOA-TQZ	France
TRA-TRZ	Gabonese Republic
TSA-TSZ	Tunisia
TTA-TTZ	Chad (Republic of)
TUA-TUZ	Côte d'Ivoire (Republic of)
TVA-TXZ	France
TYA-TYZ	Benin (Republic of)
TZA-TZZ	Mali (Republic of)
T2A-T2Z	Tuvalu
T3A-T3Z	Kiribati (Republic of)
T4A-T4Z	Cuba
T5A-T5Z	Somali Democratic Republic
T6A-T6Z	Afghanistan (Islamic State of)
T7A-T7Z	San Marino (Republic of)
T8A-T8Z	Palau (Republic of)
T9A-T9Z	Bosnia and Herzegovina (Republic of)
UAA-UIZ	Russian Federation
UJA-UMZ	Uzbekistan (Republic of)
UNA-UQZ	Kazakhstan (Republic of)
URA-UZZ	Ukraine
VAA-VGZ	Canada
VHA-VNZ	Australia
VOA-VOZ	Canada
VPA-VQZ	United Kingdom of Great Britain and Northern Ireland
VRA-VRZ	China (People's Republic of) - Hong Kong
VSA-VSZ	United Kingdom of Great Britain and Northern Ireland
VTA-VWZ	India (Republic of)
VXA-VYZ	Canada
VZA-VZZ	Australia
V2A-V2Z	Antigua and Barbuda
V3A-V3Z	Belize
V4A-V4Z	Saint Kitts and Nevis
V5A-V5Z	Namibia (Republic of)
V6A-V6Z	Micronesia (Federated States of)
V7A-V7Z	Marshall Islands (Republic of the)
V8A-V8Z	Brunei Darussalam
WAA-WZZ	United States of America
XAA-XIZ	Mexico
XJA-XOZ	Canada
XPA-XPZ	Denmark
XQA-XRZ	Chile
XSA-XSZ	China (People's Republic of)
XTA-XTZ	Burkina Faso
XUA-XUZ	Cambodia (Kingdom of)
XVA-XVZ	Viet Nam (Socialist Republic of)
XWA-XWZ	Laos (People's Democratic Republic)
XXA-XXZ	China (People's Republic of) - Macao
XYA-XZZ	Myanmar (Union of)
YAA-YAZ	Afghanistan (Islamic State of)
YBA-YHZ	Indonesia (Republic of)
YIA-YIZ	Iraq (Republic of)

YJA-YJZ	Vanuatu (Republic of)
YKA-YKZ	Syrian Arab Republic
YLA-YLZ	Latvia (Republic of)
YMA-YMZ	Turkey
YNA-YNZ	Nicaragua
YOA-YRZ	Romania
YSA-YSZ	El Salvador (Republic of)
YTA-YUZ	Serbia
YVA-YYZ	Venezuela
YZA-YZZ	Serbia
Y2A-Y9Z	Germany (Federal Republic of)
ZAA-ZAZ	Albania (Republic of)
ZBA-ZJZ	United Kingdom of Great Britain and Northern Ireland
ZKA-ZMZ	New Zealand
ZNA-ZOZ	United Kingdom of Great Britain and Northern Ireland
ZPA-ZPZ	Paraguay (Republic of)
ZQA-ZQZ	United Kingdom of Great Britain and Northern Ireland
ZRA-ZUZ	South Africa (Republic of)
ZVA-ZZZ	Brazil (Federative Republic of)
Z2A-Z2Z	Zimbabwe (Republic of)
Z3A-Z3Z	Former Yugoslav Republic of Macedonia
2AA-2ZZ	United Kingdom of Great Britain and Northern Ireland
3AA-3AZ	Monaco (Principality of)
3BA-3BZ	Mauritius (Republic of)
3CA-3CZ	Equatorial Guinea (Republic of)
3DA-3DM	Swaziland (Kingdom of)
3DN-3DZ	Fiji (Republic of)
3EA-3FZ	Panama (Republic of)
3GA-3GZ	Chile
3HA-3UZ	China (People's Republic of)
3VA-3VZ	Tunisia
3WA-3WZ	Viet Nam (Socialist Republic of)
3XA-3XZ	Guinea (Republic of)
3YA-3YZ	Norway
3ZA-3ZZ	Poland (Republic of)
4AA-4CZ	Mexico
4DA-4IZ	Philippines (Republic of the)
4JA-4KZ	Azerbaijani Republic
4LA-4LZ	Georgia (Republic of)
4MA-4MZ	Venezuela (Republic of)
4NA-4OZ	Serbia
4PA-4SZ	Sri Lanka (Democratic Socialist Republic of)
4TA-4TZ	Peru
4UA-4UZ	United Nations
4VA-4VZ	Haiti (Republic of)
4WA-4WZ	Timor - Leste
4XA-4XZ	Israel (State of)
4YA-4YZ	International Civil Aviation Organization
4ZA-4ZZ	Israel (State of)
5AA-5AZ	Libya (Socialist People's Libyan Arab Jamahiriya)
5BA-5BZ	Cyprus (Republic of)
5CA-5GZ	Morocco (Kingdom of)
5HA-5IZ	Tanzania (United Republic of)
5JA-5KZ	Colombia (Republic of)
5LA-5MZ	Liberia (Republic of)
5NA-5OZ	Nigeria (Federal Republic of)
5PA-5QZ	Denmark
5RA-5SZ	Madagascar (Republic of)
5TA-5TZ	Mauritania (Islamic Republic of)
5UA-5UZ	Niger (Republic of the)
5VA-5VZ	Togolese Republic
5WA-5WZ	Samoa (Independent State of)
5XA-5XZ	Uganda (Republic of)
5YA-5ZZ	Kenya (Republic of)
6AA-6BZ	Egypt (Arab Republic of)
6CA-6CZ	Syrian Arab Republic
6DA-6JZ	Mexico
6KA-6NZ	Korea (Republic of)
6OA-6OZ	Somali Democratic Republic
6PA-6SZ	Pakistan (Islamic Republic of)
6TA-6UZ	Sudan (Republic of the)
6VA-6WZ	Senegal (Republic of)
6XA-6XZ	Madagascar (Republic of)
6YA-6YZ	Jamaica
6ZA-6ZZ	Liberia (Republic of)
7AA-7IZ	Indonesia (Republic of)
7JA-7NZ	Japan
7OA-7OZ	Yemen (Republic of)
7PA-7PZ	Lesotho (Kingdom of)
7QA-7QZ	Malawi
7RA-7RZ	Algeria (People's Democratic Republic of)
7SA-7SZ	Sweden
7TA-7YZ	Algeria (People's Democratic Republic of)
7ZA-7ZZ	Saudi Arabia (Kingdom of)
8AA-8IZ	Indonesia (Republic of)
8JA-8NZ	Japan
8OA-8OZ	Botswana (Republic of)
8PA-8PZ	Barbados
8QA-8QZ	Maldives (Republic of)
8RA-8RZ	Guyana
8SA-8SZ	Sweden
8TA-8YZ	India (Republic of)
8ZA-8ZZ	Saudi Arabia (Kingdom of)
9AA-9AZ	Croatia (Republic of)
9BA-9DZ	Iran (Islamic Republic of)
9EA-9FZ	Ethiopia (Federal Democratic Republic of)
9GA-9GZ	Ghana
9HA-9HZ	Malta
9IA-9JZ	Zambia (Republic of)
9KA-9KZ	Kuwait (State of)
9LA-9LZ	Sierra Leone
9MA-9MZ	Malaysia
9NA-9NZ	Nepal
9OA-9TZ	Congo (Democratic Republic of)
9UA-9UZ	Burundi (Republic of)
9VA-9VZ	Singapore (Republic of)
9WA-9WZ	Malaysia
9XA-9XZ	Rwandese Republic
9YA-9ZZ	Trinidad and Tobago

THE PHONETIC ALPHABET

The Phonetic Alphabet should be used with considerable discretion. Its primary purpose is to obviate confusion between letters and figures which have similar sounds, e.g.: BCDEGPTV, AKJ, MN, QU, FS, TWO, THREE, FIVE, NINE.

The possibility of confusion increases greatly under adverse operating conditions such as adjacent channel interference, high level of acoustic and electrical background noise, poor audio quality (including inferior articulation), fading, etc. Under these conditions more frequent use of the phonetic code may be necessary. However, when there is a complete absence of interference of any kind and signals are perfectly readable, phonetics can be eliminated except for difficult place names, proper names, and unusual words. Regardless of the quality of the circuit phonetics should always be used for call-signs during the establishment of initial contact. It is important to memorize the code thoroughly and to avoid using substitute words.

Phonetic Alphabet

Some words are likely to be misunderstood when passed over radio telephone circuits, due to phonetic similarity. A number of phonetic alphabets have been introduced to overcome this. The following being the most generally accepted at the present time.

A	ALFA	AL fah
B	BRAVO	BRAH voh
C	CHARLIE	CHAR lee
D	DELTA	DELL tah
E	ECHO	ECK oh
F	FOXTROT	FOKS trot
G	GOLF	GOLF
H	HOTEL	hoh TELL
I	INDIA	IN dee ah
J	JULIET	JEW lee ETT
K	KILO	KEY loh
L	LIMA	LEE mah
M	MIKE	MIKE
N	NOVEMBER	no VEM ber
O	OSCAR	OSS cah
P	PAPA	pah PAH
Q	QUEBEC	Kwee BECK or Key BECK
R	ROMEO	ROW me oh
S	SIERRA	See AIR rah
T	TANGO	TANG go
U	UNIFORM	YOU nee form or OO nee form
V	VICTOR	VIK tor
W	WHISKEY	WISS key
X	X-RAY	ECKS ray
Y	YANKEE	YANG kee
Z	ZULU	ZOO loo

1 WUN	2 TOO	3 thuh-REE	4 FO-wer	5 FI-yiv
6 SIX	7 seVEN	8 AIT	9 NI-ner	0 ZERO

DX CENTURY CLUB COUNTRIES LIST

Current Countries Total 335—Revised January 2006—Reproduced courtesy ARRL

Prefix	Entity	Conti-nent	ZONE ITU	ZONE CQ
[1]	Spratly Is.	AS	50	26
1A0[11]	Sov. Mil. Order of Malta	EU	28	15
3A*	Monaco	EU	27	14
3B6, 7*	Agalega & St. Brandon Is.	AF	53	39
3B8	Mauritius	AF	53	39
3B9*	Rodrigues I.	AF	53	39
3C	Equatorial Guinea	AF	47	36
3C0	Annobon I.	AF	52	36
3D2*	Fiji	OC	56	32
3D2*	Conway Reef	OC	56	32
3D2*	Rotuma I.	OC	56	32
3DA#	Swaziland	AF	57	38
3V*	Tunisia	AF	37	33
3W, XV	Vietnam	AS	49	26
3X	Guinea	AF	46	35
3Y*	Bouvet	AF	67	38
3Y*	Peter I I.	AN	72	12
4J, 4K	Azerbaijan	AS	29	21
4L*	Georgia	AS	29	21
4P-4S*	Sri Lanka	AS	41	22
4U—ITU#*	ITU HQ	EU	28	14
4U—UN*	United Nations HQ	NA	8	5
4W[44]	Timor - Leste	OC	54	28
4X, 4Z#*	Israel	AS	39	20
5A	Libya	AF	38	34
5B*	Cyprus	AS	39	20
5H-5I*	Tanzania	AF	53	37
5N-5O*	Nigeria	AF	46	35
5R-5S	Madagascar	AF	53	39
5T[2]	Mauritania	AF	46	35
5U[3]	Niger	AF	46	35
5V	Togo	AF	46	35
5W*	Samoa	OC	62	32
5X*	Uganda	AF	48	37
5Y-5Z*	Kenya	AF	48	37
6V-6W[41]*	Senegal	AF	46	35
6Y#*	Jamaica	NA	11	8
7O[5]	Yemen	AS	39	21
7P	Lesotho	AF	57	38
7Q	Malawi	AF	53	37
7T-7Y*	Algeria	AF	37	33
8P*	Barbados	NA	11	8
8Q	Maldives	AS/AF	41	22
8R#*	Guyana	SA	12	9
9A[6]*	Croatia	EU	28	15
9G[7]#*	Ghana	AF	46	35
9H*	Malta	EU	28	15
9I-9J*	Zambia	AF	53	36
9K*	Kuwait	AS	39	21
9L#*	Sierra Leone	AF	46	35
9M2, 4[8]*	West Malaysia	AS	54	28
9M6, 8[8]*	East Malaysia	OC	54	28
9N	Nepal	AS	42	22
9Q-9T*	Dem. Rep. of Congo	AF	52	36
9U[9]	Burundi	AF	52	36
9V[10]*	Singapore	AS	54	28
9X[9]	Rwanda	AF	52	36
9Y-9Z#*	Trinidad & Tobago	SA	11	9
A2*	Botswana	AF	57	38
A3	Tonga	OC	62	32
A4*	Oman	AS	39	21
A5	Bhutan	AS	41	22
A6	United Arab Emirates	AS	39	21
A7*	Qatar	AS	39	21
A9*	Bahrain	AS	39	21
AP-AS*	Pakistan	AS	41	21
BS7[11]	Scarborough Reef	AS	50	27
BV*	Taiwan	AS	44	24
BV9P[12]	Pratas I.	AS	44	24
BY*	China	AS	(A)	23,24
C2*	Nauru	OC	65	31
C3*	Andorra	EU	27	14

Prefix	Entity	Conti-nent	ZONE ITU	ZONE CQ
C5#*	The Gambia	AF	46	35
C6*	Bahamas	NA	11	8
C8-9*	Mozambique	AF	53	37
CA-CE#*	Chile	SA	14, 12	16
CE0#*	Easter I.	SA	63	12
CE0#*	Juan Fernandez Is.	SA	14	12
CE0#*	San Felix & San Ambrosio	SA	14	12
CE9/KC4^*	Antarctica	AN	(B)	(C)
CM, CO#*	Cuba	NA	11	8
CN	Morocco	AF	37	33
CP#*	Bolivia	SA	12, 14	14
CT*	Portugal	EU	37	14
CT3*	Madeira Is.	AF	36	33
CU*	Azores	EU	36	14
CV-CX#*	Uruguay	SA	14	13
CY0*	Sable I.	NA	9	5
CY9*	St. Paul I.	NA	9	5
D2-3	Angola	AF	52	36
D4*	Cape Verde	AF	46	35
D6#[13]*	Comoros	AF	53	39
DA-DR[14]*	Fed. Rep. of Germany	EU	28	14
DU-DZ#*	Philippines	OC	50	27
E3[15]	Eritrea	AF	48	37
E4[43]	Palestine	AS	39	20
E5	N. Cook Is.	OC	62	32
E5	S. Cook Is.	OC	62	32
EA-EH*	Spain	EU	37	14
EA6-EH6*	Balearic Is.	EU	37	14
EA8-EH8*	Canary Is.	AF	36	33
EA9-EH9*	Ceuta & Melilla	AF	37	33
EI-EJ*	Ireland	EU	27	14
EK*	Armenia	AS	29	21
EL#*	Liberia	AF	46	35
EP-EQ*	Iran	AS	40	21
ER*	Moldova	EU	29	16
ES*	Estonia	EU	29	15
ET*	Ethiopia	AF	48	37
EU, EV, EW*	Belarus	EU	29	16
EX*	Kyrgyzstan	AS	30, 17	31
EY*	Tajikistan	AS	30	17
EZ*	Turkmenistan	AS	30	17
F*	France	EU	27	14
FG*	Guadeloupe	NA	11	8
FJ, FS[1]*	Saint Martin	NA	11	8
FH[13]*	Mayotte	AF	53	39
FK*	New Caledonia	OC	56	32
FK/C[45]	Chesterfield Is.	OC	56	30
FM*	Martinique	NA	11	8
FO[16]*	Austral I.	OC	63	32
FO*	Clipperton I.	NA	10	7
FO*	French Polynesia	OC	63	32
FO[16]*	Marquesas Is.	OC	63	31
FP*	St. Pierre & Miquelon	NA	9	5
FR/G[17]*	Glorioso Is.	AF	53	39
FR/J, E[17]*	Juan de Nova, Europa	AF	53	39
FR*	Reunion I.	AF	53	39
FR/T*	Tromelin I.	AF	53	39
FT5W*	Crozet I.	AF	68	39
FT5X*	Kerguelen Is.	AF	68	39
FT5Z*	Amsterdam & St. Paul Is.	AF	68	39
FW*	Wallis & Futuna Is.	OC	62	32
FY*	French Guiana	SA	12	9
G, GX*&	England	EU	27	14
GD, GT*	Isle of Man	EU	27	14
GI, GN*	Northern Ireland	EU	27	14
GJ, GH*	Jersey	EU	27	14
GM, GS*	Scotland	EU	27	14
GU, GP*	Guernsey	EU	27	14
GW, GC*	Wales	EU	27	14
H4*	Solomon Is.	OC	51	28
H40[18]*	Temotu Province	OC	51	32
HA, HG*	Hungary	EU	28	15

Prefix	Entity	Conti-nent	ZONE ITU	ZONE CQ
HB*	Switzerland	EU	28	14
HB0*	Liechtenstein	EU	28	14
HC-HD#*	Ecuador	SA	12	10
HC8-HD8#*	Galapagos Is.	SA	12	10
HH#*	Haiti	NA	11	8
HI#*	Dominican Republic	NA	11	8
HJ-HK#*	Colombia	SA	12	9
HK0#*	Malpelo I.	SA	12	9
HK0#*	San Andres & Providencia	NA	11	7
HL*	Republic of Korea	AS	44	25
HO-HP#*	Panama	NA	11	7
HQ-HR#*	Honduras	NA	11	7
HS, E2*	Thailand	AS	49	26
HV	Vatican	EU	28	15
HZ*	Saudi Arabia	AS	39	21
I*	Italy	EU	28	15, 33
IS0, IM0*	Sardinia	EU	28	15
J2*	Djibouti	AF	48	37
J3#*	Grenada	NA	11	8
J5	Guinea-Bissau	AF	46	35
J6#*	St. Lucia	NA	11	8
J7#*	Dominica	NA	11	8
J8#	St. Vincent	NA	11	8
JA-JS*	Japan	AS	45	25
JD1[19]*	Minami Torishima	OC	90	27
JD1[20]*	Ogasawara	AS	45	27
JT-JV*	Mongolia	AS	32, 23	33
JW*	Svalbard	EU	18	40
JX*	Jan Mayen	EU	18	40
JY#*	Jordan	AS	39	20
K,W,N,	United States of America	NA	6,	3,4,
AA-AK#			7,8	5
KG4#	Guantanamo Bay	NA	11	8
KH0#	Mariana Is.	OC	64	27
KH1#	Baker & Howland Is.	OC	61	31
KH2#*	Guam	OC	64	27
KH3#*	Johnston I.	OC	61	31
KH4#	Midway I.	OC	61	31
KH5#	Palmyra & Jarvis Is. OC		61,	31 62
KH5K#	Kingman Reef	OC	61	31
KH6,7#*	Hawaii	OC	61	31
KH7K#	Kure I.	OC	61	31
KH8#*	American Samoa	OC	62	32
KH8[48]#*	Swains I.	OC	62	32
KH9#	Wake I.	OC	65	31
KL7#*	Alaska	NA	1,2	1
KP1#	Navassa I.	NA	11	8
KP2#*	Virgin Is.	NA	11	8
KP3,4#*	Puerto Rico	NA	11	8
KP5[22]#	Desecheo I.	NA	11	8
LA-LN*	Norway	EU	18	14
LO-LW#*	Argentina	SA	14, 13	16
LX*	Luxembourg	EU	27	14
LY*	Lithuania	EU	29	15
LZ*	Bulgaria	EU	28	20
OA-OC#*	Peru	SA	12	10
OD*	Lebanon	AS	39	20
OE#*	Austria	EU	28	15
OF-OI*	Finland	EU	18	15
OH0*	Aland Is.	EU	18	15
OJ0*	Market Reef	EU	18	15
OK-OL[23]*	Czech Republic	EU	28	15
OM[23]*	Slovak Republic	EU	28	15
ON-OT*	Belgium	EU	27	14
OX*	Greenland	NA	5, 40	75
OY*	Faroe Is.	EU	18	14
OZ*	Denmark	EU	18	14
P2[24]	Papua New Guinea	OC	51	28
P4[25]*	Aruba	SA	11	9
P5[26]	DPR of Korea	AS	44	25
PA-PI*	Netherlands	EU	27	14
PJ2, 4, 9*	Bonaire, Curacao (Neth. Antilles)	SA	11	9
PJ5-8*	St. Maarten, Saba, St. Eustatius	NA	11	8
PP-PY#*	Brazil	SA	(D)	11
PP0-PY0F#*	Fernando de Noronha	SA	13	11
PP0-PY0S#*	St. Peter & St. Paul Rocks	SA	13	11

Prefix	Entity	Conti-nent	ZONE ITU	ZONE CQ
PP0-PY0T#*	Trindade & Martim Vaz Is.	SA	15	11
PZ	Suriname	SA	12	9
R1FJ*	Franz Josef Land	EU	75	40
R1MV*	Malyj Vysotskij I.	EU	29	16
S0[1],[27]	Western Sahara	AF	46	33
S2*	Bangladesh	AS	41	22
S5[6]*	Slovenia	EU	28	15
S7	Seychelles	AF	53	39
S9*	Sao Tome & Principe	AF	47	36
SA-SM*	Sweden	EU	18	14
SN-SR*	Poland	EU	28	15
ST*	Sudan	AF	48	34
SU	Egypt	AF	38	34
SV-SZ*	Greece	EU	28	20
SV/A*	Mount Athos	EU	28	20
SV5*	Dodecanese	EU	28	20
SV9*	Crete	EU	28	20
T2[28]	Tuvalu	OC	65	31
T30	W. Kiribati (Gilbert Is.)	OC	65	31
T31	C. Kiribati (British Phoenix Is.)	OC	62	31
T32	E. Kiribati (Line Is.)	OC	61, 31	63
T33	Banaba I. (Ocean I.)	OC	65	31
T5	Somalia	AF	48	37
T7*	San Marino	EU	28	15
T8, KC6[21]	Palau	OC	64	27
T9(29)#*	Bosnia-Herzegovina	EU	28	15
TA-TC*	Turkey	EU/AS	39	20
TF*	Iceland	EU	17	40
TG, TD#*	Guatemala	NA	12	7
TI, TE#*	Costa Rica	NA	11	7
TI9#*	Cocos I.	NA	12	7
TJ	Cameroon	AF	47	36
TK*	Corsica	EU	28	15
TL[30]	Central Africa	AF	47	36
TN[31]	Congo (Republic of the)	AF	52	36
TR[32]*	Gabon	AF	52	36
TT[33]	Chad	AF	47	36
TU[34]*	Cote d'Ivoire	AF	46	35
TY[35]	Benin	AF	46	35
TZ[36]*	Mali	AF	46	35
UA-UI1,3,4,6 RA-RZ*	European Russia	EU	(E)	16
UA2*	Kaliningrad	EU	29	15
UA-UI8,9,0 RA-RZ*	Asiatic Russia	AS	(F)	(G)
UJ-UM	Uzbekistan	AS	30	17
UN-UQ*	Kazakhstan	AS	29-31	17
UR-UZ, EM-EO*	Ukraine	EU	29	16
V2#*	Antigua & Barbuda	NA	11	8
V3#	Belize	NA	11	7
V4[37]#*	St. Kitts & Nevis	NA	11	8
V5*	Namibia	AF	57	38
V6[38]	Micronesia	OC	65	27
V7#*	Marshall Is.	OC	65	31
V8*	Brunei Darussalam	OC	54	28
VE, VO, VY#*	Canada	NA	(H)	5-Jan
VK#*	Australia	OC	(I)	29,30
VK0#*	Heard I.	AF	68	39
VK0#*	Macquarie I.	OC	60	30
VK9C#*	Cocos-Keeling Is.	OC	54	29
VK9L#*	Lord Howe I.	OC	60	30
VK9M#*	Mellish Reef	OC	56	30
VK9N	Norfolk I.	OC	60	32
VK9W#*	Willis I.	OC	55	30
VK9X#*	Christmas I.	OC	54	29
VP2E[37]	Anguilla	NA	11	8
VP2M[37]	Montserrat	NA	11	8
VP2V[37]*	British Virgin Is.	NA	11	8
VP5*	Turks & Caicos Is.	NA	11	8
VP6#*	Pitcairn I.	OC	63	32
VP6[46]*	Ducie I.	OC	63	32
VP8*	Falkland Is.	SA	16	13
VP8, LU*	South Georgia I.	SA	73	13
VP8, LU*	South Orkney Is.	SA	73	13
VP8, LU*	South Sandwich Is.	SA	73	13
VP8, LU,	South Shetland Is.	SA	73	13
CE9, HF0, 4K1*				
VP9*	Bermuda	NA	11	5

Prefix	Entity	Continent	ZONE ITU	ZONE CQ
VQ9*	Chagos Is.	AF	41	39
VR*	Hong Kong	AS	44	24
VU*	India	AS	41	22
VU*	Andaman & Nicobar Is.	AS	49	26
VU*	Lakshadweep Is.	AS	41	22
XA-XI#*	Mexico	NA	10	6
XA4-XI4#*	Revillagigedo	NA	10	6
XT[39]*	Burkina Faso	AF	46	35
XU	Cambodia	AS	49	26
XW	Laos	AS	49	26
XX9*	Macao	AS	44	24
XY-XZ	Myanmar	AS	49	26
YA	Afghanistan	AS	40	21
YB-YH[10]*	Indonesia	OC	51, 28	54
YI*	Iraq	AS	39	21
YJ*	Vanuatu	OC	56	32
YK*	Syria	AS	39	20
YL*	Latvia	EU	29	15
YN#*	Nicaragua	NA	11	7
YO-YR*	Romania	EU	28	20
YS#*	El Salvador	NA	11	7
YT-YU, YZ*	Serbia	EU	28	15
(TBD)[47]	Montenegro	EU	28	15
YV-YY#*	Venezuela	SA	12	9
YV0#*	Aves I.	NA	11	8
Z2	Zimbabwe	AF	53	38
Z3[41]*	Macedonia	EU	28	15
ZA*	Albania	EU	28	15
ZB2*	Gibraltar	EU	37	14
ZC4[42]*	UK Sov. Base Areas on Cyprus	AS	39	20
ZD7*	St. Helena	AF	66	36
ZD8*	Ascension I.	AF	66	36
ZD9	Tristan da Cunha & Gough I.	AF	66	38
ZF*	Cayman Is.	NA	11	8
ZK2*	Niue	OC	62	32
ZK3*	Tokelau Is.	OC	62	31
ZL-ZM*	New Zealand	OC	60	32
ZL7*	Chatham Is.	OC	60	32
ZL8*	Kermadec Is.	OC	60	32
ZL9*	Auckland & Campbell Is.	OC	60	32
ZP#*	Paraguay	SA	14	11
ZR-ZU#*	South Africa	AF	57	38
ZS8*	Prince Edward & Marion Is.	AF	57	38

Notes

(1) Unofficial prefix.
(2) (5T) Only contacts made June 20, 1960, and after, count for this entity.
(3) (5U) Only contacts made August 3, 1960, and after, count for this entity.
(4) (6W) Only contact made June 20, 1960, and after, count for this entity.
(5) (70) Only contacts made May 22, 1990, and after, count for this entity.
(6) (9A,S5) Only contacts made June 26, 1991, and after, count for this entity.
(7) (9G) Only contacts made March 5, 1957, and after, count for this entity.
(8) (9M2,4,6,8) Only contacts made September 16, 1963, and after, count for this entity.
(9) (9U, 9X) Only contacts made July 1, 1962, and after, count for this entity.
(10) (9V) Contacts made from September 16, 1963 to August 8, 1965, count for West Malaysia.
(11) (BS7) Only contacts made January 1, 1995, and after, count for this entity.
(12) (BV9P) Only contact made January 1, 1994, and after, count for this entity.
(13) (D6,FH) Only contacts made July 6, 1975, and after, count for this entity.
(14) (DA-DR) Only contacts made with DA-DL stations September 17, 1973, and after, and contacts made Y2-Y9 stations October 3, 1990 and after, count for this entity.
(15) (E3) Only contacts made November 14, 1962, and before, or May 24, 1991, and after, count for this entity.
(16) (FO) Only contacts made after 23:59 UTC, March 31, 1998 count for this entity.
(17) (FR) Only contacts made June 25, 1960, and after, count for this entity.
(18) (H40) Only contacts made after 23:59 UTC, March 31, 1998 count for this entity.
(19) (JD) Formerly Marcus Island.
(20) (JD) Formerly Bonin and Volcano Islands
(21) (KC6) Includes Yap Islands December 31, 1980, and before.
(22) (KP5) Only contacts made March 1, 1979, and after, count for this entity.
(23) (OK-OL, OM) Only contacts made January 1, 1993, and after, count for this entity.
(24) (P2) Only contacts made September 16, 1975, and after count for this entity.
(25) (P4) Only contacts made January 1, 1986, and after, count for this entity.
(26) (P5) Only contacts made May 14, 1995, and after, count for this entity.
(27) (S0) Contacts with Rio de Oro (Spanish Sahara), EA9, also count for this entity.
(28) (T2) Only contacts made January 1, 1976, and after, count for this entity.
(29) (T9) Only contacts made October 15, 1991, and after, count for this entity.
(30) (TL) Only contacts made August 13, 1960, and after, count for this entity.
(31) (TN) Only contacts made August 15, 1960, and after, count for this entity.
(32) (TR) Only contacts made August 17, 1960, and after, count for this entity.
(33) (TT) Only contacts made August 11, 1960, and after, count for this entity.
(34) (TU) Only contacts made August 7, 1960, and after, count for this entity.
(35) (TY) Only contacts made August 1, 1960, and after, count for this entity.
(36) (TZ) Only contacts made June 20, 1960, and after, count for this entity.
(37) (V4,VP2) For DXCC credit for contacts made May 31, 1958, and before, see page 97, June 1958 QST.
(38) (V6) Includes Yap Islands January 1, 1981, and after.
(39) (XT) Only contacts made August 16, 1960, and after, count for this entity.
(40) (YB) Only contacts made May 1, 1963, and after, count for this entity.
(41) (Z3) Only contacts made September 8, 1991, and after, count for this entity.
(42) (ZC4) Only contacts made August 16, 1960, and after, count for this entity.
(43) (E4) Only contacts made February 1, 1999, and after, count for this entity.
(44) (4W) Only contacts made March 1, 2000, and after, count for this entity.
(45) (FK/C) Only contacts made March 23, 2000, and after, count for this entity.
(46) (VP6) Only contacts made November 16, 2001, and after, count for this entity.
(47) (To Be Determined) Only contacts made June 28, 2006, and after, count for this entity.
(48) (KH8) Only contacts made July 22, 2006, and after, count for this entity.

*Also 3Y, 8J1, AT0, DP0, FT8Y, LU, OR4, VK0, R1AW, VP8, ZL5, ZS1, ZX0, etc. QSL via country under whose auspices the particular station is operating. The availability of a third-party traffic agreement and a QSL Bureau applies to the country under whose auspices the particular station is operating.

Zone Notes can be found with Prefix Cross References.

DELETED ENTITIES

Credit for any of these entities can be given if the date of contact in question agrees with the date(s) shown in the corresponding footnote. Entities deleted after 23:59 UTC 31 March 1998 will not be included in the Deleted List.

Prefix	Entity	Conti-nent	ZONE ITU	ZONE CQ
(2)	Blenheim Reef	AF	41	39
(3)	Geyser Reef	AF	53	39
(4)	Abu Ail Is.	AS	39	21
1M(1),(5)	Minerva Reef	OC	62	32
4W(6)	Yemen Arab Rep.	AS	39	21
7J1(7)	Okino Tori-shima	AS	45	27
8Z4(8)	Saudi Arabia/Iraq Neut. Zone	AS	39	21
8Z5, 9K3(9)	Kuwait/Saudi Arabia Neut. Zone	AS	39	21
9S4(10)	Saar	EU	28	14
9U5(11)	Ruanda-Urundi	AF	52	36
AC3(1),(12)	Sikkim	AS	41	22
AC4(1),(13)	Tibet	AS	41	23
C9(14)	Manchuria	AS	33	24
CN2(15)	Tangier	AF	37	33
CR8(16)	Damao, Diu	AS	41	22
CR8(16)	Goa	AS	41	22
CR8, CR10(17)	Portuguese Timor	OC	54	28
DA-DM(18)	Germany	EU	28	14
DM, Y2-9(19)	German Dem. Rep.	EU	28	14
EA9(20)	Ifni	AF	37	33
FF(21)	French West Africa	AF	46	35
FH, FB8(22)	Comoros	AF	53	39
FI8(23)	French Indo-China	AS	49	26
FN8(24)	French India	AS	41	22
FQ8(25)	Fr. Equatorial Africa	AF	47, 52	36
HK0(26)	Bajo Nuevo	NA	11	08
HK0,KP3,KS4(26)	Serrana Bank & Roncador Cay	NA	11	07
I1(27)	Trieste	EU	28	15
I5(28)	Italian Somaliland	AF	48	37
JZ0(29)	Netherlands N. Guinea	OC	51	28
KR6,8,JR6, KA6(30)	Okinawa (Ryukyu Is.)	AS	45	25
KS4(31)	Swan Is.	NA	11	07
KZ5(32)	Canal Zone	NA	11	07
OK-OM(33)	Czechoslovakia	EU	28	15
P2, VK9(34)	Papua Territory	OC	51	28
P2, VK9(34)	Terr. New Guinea	OC	51	28
PK1-3(35)	Java	OC	54	28
PK4(35)	Sumatra	OC	54	28
PK5(35)	Netherlands Borneo	OC	54	28
PK6(35)	Celebe & Molucca Is.	OC	54	28
ST0(36)	Southern Sudan	AF	47, 48	34
UN1(37)	Karelo-Finnish Rep.	EU	19	16
VO(38)	Newfoundland, Labrador	NA	09	02,05
VQ1, 5H1(39)	Zanzibar	AF	53	37
VQ6(40)	British Somaliland	AF	48	37
VQ9(40)	Aldabra	AF	53	39
VQ9(40)	Desroches	AF	53	39
VQ9(40)	Farquhar	AF	53	39
VS2, 9M2(42)	Malaya	AS	54	28
VS4(42)	Sarawak	OC	54	28
VS9A, P, S(43)	People's Dem. Rep. of Yemen	AS	39	21
VS9H(44)	Kuria Muria I.	AS	39	21
VS9K(45)	Kamaran Is.	AS	39	21
ZC5(42)	British North Borneo	OC	54	28
ZC6, 4X1(46)	Palestine	AS	39	20
ZD4(47)	Gold Coast, Togoland	AF	46	35
ZS0, 1(48)	Penguin Is.	AF	57	38
ZS9(49)	Walvis Bay	AF	57	38

Notes

(1) Unofficial prefix.

(2) (Blenheim Reef) Only contacts made from May 4, 1967, to June 30, 1975, count for this entity. Contacts made July 1, 1975, and after, count as Chagos (VQ9).

(3) (Geysey Reef) Only contacts made from May 4, 1967, to February 28, 1978, count for this entity.

(4) (Abu Ail Is.) Only contacts made March 30, 1991, and before,count for this entity.

(5) (1M) Only contacts made from July 15, 1972, and before, count for this entity. Contacts made July 16, 1972, and after, count as Tonga (A3).

(6) (4W) Only contacts made before May 21, 1990, and before, count for this entity.

(7) (7J1) Only contacts made May 30, 1976, to November 30, 1980,count for this entity. Contacts made December 1, 1980, and after entity as Ogasawara (JD1).

(8) (8Z4) Only contacts made December 25, 1981, and before, count for this entity.

(9) (8Z5,9K3) Only contacts made December 14, 1969, and before,count for this entity.

(10) (9S4) Only contacts made March 31, 1957, and before, count for this entity.

(11) (9U5) Only contacts made from July 1, 1960, to June 30, 1962, count for this entity. Contact made July 1, 1962, and after, count as Burundi (9U) or Rwanda (9X).

(12) (AC3) Only contacts made April 30, 1975, and before, count for this entity. Contacts made May 1, 1975, and after,count as India (VU).

(13) (AC4) Only contacts made May 30, 1974, and before, count for this entity. Contact made May 31, 1974, and after, count asChina (BY).

(14) (C9) Only contacts made September 15, 1963, and before, count for this entity. Contact made September 16, 1963, and after, count as China (BY).

(15) (CN2) Only contacts made June 30, 1960, and before, count for this entity. Contact made July 1, 1960, and after, count as Morocco (CN).

(16) (CR8) Only contacts made December 31, 1961, and before, count for this entity.

(17) (CR8,CR10) Only contacts made September 14, 1976, and before, count for this entity.

(18) (DA-DM) Only contacts made September 16, 1973, and before,count for this entity. Contacts made September 17, 1973, and after, count as either FRG (DA-DL) or GDR (Y2-Y9).

(19) (DM,Y2-9) Only contacts made from September 17, 1973, to October 2, 1990 count for this entity. On October 3, 1990 the GDR became part of the FRG.

(20) (EA9) Only contacts made May 13, 1969, and before, count for this entity.

(21) (FF) Only contacts made August 6, 1960, and before, count for this entity.

(22) (FH, FB8) Only contacts made July 5, 1975, and before, count for this entity. Contacts made July 6, 1975, and after, count as Comoros (D6) or Mayotte (FH).

(23) (FI8) Only contacts made December 20, 1950, and before, count for this entity.

(24) (FN8) Only contacts made October 31, 1954, and before, count for this entity.

(25) (FQ8) Only contacts made August 16, 1960, and before will count for this entity.

(26) (HK0,KP3,KS4) Only contacts made September 16, 1981, and before, count for this entity. Contacts made September 17,1981, and after, count as San Andres (HK).

(27) (I1) Only contacts made March 31, 1957, and before, count for this entity.

(28) (I5) Only contacts made June 30, 1960, and before, count for this entity.

(29) (JZ) Only contacts made April 30, 1963, and before, count for this entity.

(30) (KR6,8,JR6,KA6) Only contacts made May 14, 1972, and before, count for this entity. Contacts made May 15, 1972, andafter, count as Japan (JA).

(31) (KS4) Only contacts made August 31, 1972, and before, count for this entity. Contacts made September 1, 1972, and after, count as Honduras (HR).

(32) (KZ5) Only contacts made September 30, 1979, and before,count for this entity.

(33) (OK-OM) Only contacts made December 31, 1992, and before, count for this entity.

(34) (P2,VK9) Only contacts made September 15, 1975, and before, count for this entity. Contacts made September 16, 1975,and after, count as Papua New Guinea (P2).

(35) (PK1-6) Only contacts made April 30, 1963, and before, count for this entity. Contact made May 1, 1963, and after, countas Indonesia.

(36) Only contacts made between May 7, 1972 and December 31, 1994, count for this entity.

(37) (UN1) Only contacts made June 30, 1960, and before, count for this entity. Contacts made July 1, 1960, and after count as European RSFSR (UA).

(38) (VO) Only contacts made March 31, 1949, and before, count for this entity. Contacts made April 1, 1949, and after, count as Canada (VE).

(39) (VQ1,5H1) Only contacts made May 31, 1974, and before, count for this entity. Contacts made June 1, 1974, and after, count as Tanzania (5H).

(40) (VQ6) Only contacts made June 30, 1960, and before, count for this entity.

(41) (VQ9) Only contacts made June 28, 1976, and before, count for this entity. Contacts made June 29, 1976, and after, count as Seychelles (S7).

(42) (VS2,VS4,ZC5,9M2) Only contacts made September 15, 1963, and before, count for this entity. Contacts made September 16, 1963, and after, count as West Malaysia (9M2) or EastMalaysia (9M6,8).

(43) (VS9A,P,S) Only contacts made before May 22, 1990, and before, count for this entity.

(44) (VS9H) Only contacts made November 29, 1967, and before, count for this entity.

(45) (VS9K) Only contacts made on March 10, 1982, and before, count for this entity.

(46) (ZC6,4X1) Only contacts made June 30, 1968, and before, count for this entity. Contacts made July 1, 1968, and after, count as Israel (4X).

(47) (ZD4) Only contacts made March 5, 1957, and before, count for this entity.

(48) (ZS0, 1) Only contacts made February 29, 1994, and before,count for this entity.

(49) (ZS9) Only contacts made from September 1, 1977 to February 28, 1994, count for this entity.

PREFIX CROSS REFERENCES

A8 = EL
AC (before 1972) = A5
AH = KH
AL7 = KL7
AM-AO = EA
AX = VK
AY-AZ = LU
CF-CK = VE
CL = CO
CQ-CS = CT
CR3 (before 1974) = J5
CR4 (before 1976) = D4
CR5 (before 1976) = S9
CR6 (before 1976) = D2
CR7 (before 1976) = C9
CR9 (before 1985) = XX9
CT2 (before 1986) = CU
CX0 = CE9/VP8
CY-CZ = VE
CY0 (before 1985) = CY9
D7 = HL
DM-DT (before 1980) = Y2-9
DS-DT = HL
E2 = HS
EA0 (before 1969) = 3C
EK, EM-EO, ER-ES, EU-EZ = U
ER (after 1992) = UO
EU (after 1991) = UC
FA-FF (after 1983) = F
FA(before 1963) = 7X
FB8 (before 1961) = 5R
FB8 (before 1985) = FT
FC(before 1985) = TK
FD8 (before 1961) = 5V
FE8 (before 1961) = TJ
FL(before 1978) = J2
FU8 (before 1982) = YJ
GB = G
GC(before 1977) = GJ or GU
H2 = 5B
H3 = HP
H5 (Bophutatswana) = ZS
H7 = YN
HE = HB
HM (before 1982) = HL
HT = YN
HU = YS
HW-HY = F
J4 = SV
KA1 = JD1
KA2AA-KA9ZZ = JA
KB6 (before 1979) = KH1
KC4 (Navassa) = KP1
KC6 (before 1990) = V6
KC6 (before 1998) = T8
KG6 (before 1979) = KH2
KG6I (before 1970) = JD1
KG6R, S, T (before 1979) = KH0
KH7 (before 1996) = KH7K
KJ6 (before 1979) = KH3
KM6 (before 1979) = KH4
KP4 (Desecheo) = KP5
KP6 (before 1979) = KH5
KS6 (before 1979) = KH8
KV4 (before 1979) = KP2
KW6 (before 1979) = KH9
KX6 (before 1990) = V7
L2-9 = LU
M = G
M1 (before 1984) = T7
MP4B (before 1972) = A9
MP4M (before 1972) = A4
MP4Q (before 1972) = A7
MP4T, D (before 1972) = A6
NH = KH
NL7 = KL7
NP = KP
OQ (before 1961) = 9Q
P3 = 5B
P4 (before 1986) = PJ
PX (before 1970) = C3
RA, RN = UA
RB-RR = UB-UR
RS = U
RT = UB
RU-RX = U
S4 (Ciskei) = ZS
S8 (Transkei) = ZS
T4 = CO
T4 (Venda) = ZS
TH, TM, TO-TQ, TV-TX = F
UB (before 1994) = UZ
UC (before 1991) = EU
UD (before 1994) = 4J
UF (before 1994) = 4L
UG (before 1994) = EK
UH (before 1993) = EZ
UI (before 1994) = UJ
UJ (before 1993) = EY
UL (before 1994) = UN
UM (before 1993) = EX
UO (before 1994) = ER
UP (before 1991) = LY
UQ (before 1992) = YL
UR (before 1991) = ES
V9 (Venda) = ZS
VA-VG = VE
VH-VN = VK
VK9 (Nauru) = C2
VP1 (before 1982) = V3
VP2A (before 1982) = V2
VP2D (before 1979) = J7
VP2G (before 1975) = J3
VP2K (before 1984) = V4 or VP2E
VP2L (before 1980) = J6
VP2S (before 1980) = J8
VP3 (before 1967) = 8R
VP4 (before 1963) = 9Y
VP5 (Jamaica) = 6Y
VP5E = VP2E
VP6 (before 1967) = 8P
VP7 (before 1974) = C6
VQ2 (before 1965) = 9J
VQ3 (before 1962) = 5H
VQ4 (before 1964) = 5Z
VQ5 (before 1963) = 5X
VQ8 (before 1969) = 3B
VQ8 (Chagos) = VQ9
VQ9 (Seychelles) = S7
VR1 (before 1980) = T3
VR2 (before 1971) = 3D2
VR2 (after 1991) = VS6
VR3 (before 1980) = T32
VR4 (before 1979) = H4
VR5 (before 1971) = A3
VR6 (before 1998) = VP6
VR8 (before 1979) = T2
VS1 (before 1966) = 9V
VS5 (before 1985) = V8
VS6 (before 1997) = VR
VS7 (before 1949) = 4S
VS9M = 8Q
VS9O (before 1961) = A4
VX-VY = CY0/VE
WH = KH
WL7 = KL7
WP = KP
XJ-XO = VE
XP = OX
XQ-XR = CE
XV = 3W
XX7 (before 1976) = C9
YU2 (before 1992) = 9A
YU3 (before1992) = S5
YU4 (before 1992) = T9
YU5 (before 1992) = Z3
ZB1 (before 1965) = 9H
ZD1 (before 1962) = 9L
ZD2 (before 1961) = 5N
ZD3 (before 1966 = C5
ZD5 (before 1969) = 3DA
ZD6 (before 1965) = 7Q
ZE (before 1981) = Z2-9
ZK (before June 2006) = E5
ZK9 (1983) = ZK2
ZM6 (before 1963) = 5W
ZM7 (before 1984) = ZK3
ZS3 (before 1991) = V5
ZS7 (before 1969) = 3D6
ZS8 (before 1967) = 7P
ZS9 (before 1967) = A2
ZV-ZZ = PY
2D = GD
2E = G
2I = GI
2J = GJ
2M = GM
2U = GU
2W = GW
3B-3C (before 1968) = VE
3D6 (before 1988) = 3DA
3G = CE
3Z = SP
4A-4C = XE
4D-4I = DU
4J-4L = U
4J (after 1991) = EK
4J1F (before 1994) = R1MV
4K (before 1994) = UA
4K1 (before 1994) = CE9/KC4
4K2 (before 1994) = R1FJ
4K3 (before 1994) = UA
4K4 (before 1994) = UA0
4L (after 1991) = UF
4M = YV
4N-4O = YU
4T = OA
4U1VIC = OE
4V = HH
5J-5K = HK
5L-5M = EL
6C = YK
6D-6J = XE
6K-6N = HL
6O = T5
6T-6U = ST
7A-7I = YB
7G (before 1967) = 3X
7J-7N = JA
7JI = JA1 or JD1
7S = SM
7Z = HZ
8A-8I = YB
8J-8N = JA
8O = A2
8S = SM
9A (before 1984) = T7
9B-9D = EP
9E-9F = ET

Continents

AF = Africa
AN = Antarctica
AS = Asia
EU = Europe
NA = North America
OC = Oceania
SA = South America

Zone Notes

(A) 33, 42, 43, 44
(B) 67, 69-74
(C) 12, 13, 29, 30, 32, 38, 39
(D) 12, 13, 15
(E) 19, 20, 29, 30
(F) 20-26, 30-35, 75
(G) 16, 17, 18, 19, 23
(H) 2, 3, 4, 9, 75
(I) 55, 58, 59

AMATEUR SATELLITES

by
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Introduction

Satellite operation is a fascinating and challenging aspect of amateur radio. There is a variety of modes both digital and analog that can be used and a choice of satellites to communicate through. Equipment required for satellite operation can range from a dual band hand held transceiver with a hand held Yagi antenna up to sophisticated ground stations with computer-controlled transceivers and antenna systems.

The amateur satellite service is recognised by the ITU. There are frequency allocations within the amateur bands for satellite operation, [see the New Zealand Amateur Radio Bandplans].

The first amateur radio satellite, was OSCAR 1 launched on December 12, 1961 by a Thor Agena B launcher from Vandenberg Air Force Base, California. Coincidentally the date was also significant because it was the 60th anniversary of the first radio transmission across the Atlantic Ocean by Guglielmo Marconi. It is impressive that amateur radio hams were able to build a successful satellite only four years after Sputnik 1, the first ever man made satellite, which was launched on October 4, 1957.

OSCAR 1 was the first non-governmental satellite ever launched. It transmitted "HI" in Morse code with 140 milliwatts of power on a frequency of 144.983 MHz. The speed of the cw message was used to indicate the temperature inside the satellite.

Since 1961 there have been approximately 90 amateur satellites launched and there are 11 more listed on the AMSAT web site, with future launch dates between September 2006 and March 2009. As at August 2006 there are 22 active satellites listed which have some form of amateur radio equipment on board. These range from satellites equipped with beacons sending telemetry data to satellites with several transponders on different bands and modes.

Most amateur radio satellites are awarded an OSCAR number as soon as the satellite is in orbit and operational. OSCAR stands for orbital satellite carrying amateur radio. So far there have been 58 OSCAR satellites. OSCAR numbers are issued sequentially and usually give a clue as to the origin of the satellite. For example AO-7 is from AMSAT North America, FO-29 is Fuji OSCAR from Japan, SO-50 is from Saudi Arabia, VO52 is from India, and UO-11 is from University of Surrey. As well as the OSCAR satellites, there was a series of 18 Russian built amateur radio satellites, which were known as Radiosputnik or "RS" satellites. Many of the RS satellites were amateur radio transponders physically attached to commercial communications satellites and were not issued with OSCAR numbers.

Amateur radio has also been an important part of manned space exploration. The Russian MIR spacecraft (1986–2001) carried ham radio and SSTV equipment. Between 1983 and 1999 ham radio licensed astronauts participated in the SAREX programme during 28 space shuttle flights. They carried out 1000s of QSOs with hams on Earth and made the first space to space ham QSOs to chat to other hams aboard the MIR space station. The international space station (ISS) carries ARISS and PCSat2. ARISS stands for "amateur radio aboard ISS", and is used for educational conversations to schools, ham QSOs by the space station crew, and Packet/APRS use. Recently there has been transmission of SSTV pictures from ARISS. It is proposed to that a slide show mode will introduced where two or more photos could be downloaded on a typical ISS satellite pass. PCSat2 was a separate VU mode digital (packet/PSK/APRS) transponder mounted on the outside of the space station. The "suitcase" carrying the radio equipment also contained an experiment studying how different materials react to being exposed to space for a long period of time. PCSat2 is due to be returned to Earth by the space shuttle on August 29, 2006, so will no longer be operational by the time the call book is published.

Probably the most unique HAMSAT so far is SuitSat, a redundant Russian "Orlan" spacesuit filled with a radio transmitter, some instrumentation, and padded out with unwanted laundry. The Expedition 12 crew launched SuitSat from the international space station on February 3rd 2006. AMSAT designated SuitSat as AMSAT OSCAR 54 (AO-54). SuitSat transmitted a digital recording of the voices of school children on 145.99 MHz. The signal was much weaker than expected, probably due to a broken antenna. SuitSat was last heard on February 18 and has now burned up in the Earth's atmosphere. There are plans for more SuitSats as there is no shortage of worn out space suits and the project attracted widespread publicity.

Amateur satellites can be grouped according to their orbit. High Earth Orbit (HEO) satellites usually have large elliptical (Molniya) orbits. For example AO-40 has an apogee of 58,776 km and a perigee of 1044 km. The "footprint" or coverage area of HEO satellites is almost a complete hemisphere, one could expect to work stations in all of Europe, Asia, the Americas and part of Africa. Unfortunately neither of the two most successful HEO HAMSATS are still in operation. AO-10 is still listed by AMSAT as semi-operational but they also show both the beacon and transponder as non-operational. In January 2004, AO-40 suffered failure of all transponders due to failure of the main battery.

Low Earth Orbit (LEO) satellites have smaller elliptical or near circular orbits with perigee (nearest point to Earth) of around 680–800 km and apogee (farthest point from Earth) of around 800–1320 km. Since the LEO satellites are closer to Earth, the coverage area or "foot print" is much smaller than the foot print of a HEO satellite. A ham in New Zealand can expect to work all of New Zealand and Australia through the LEO OSCAR satellites. The ISS has a nearly circular orbit 333 km perigee to 348 km apogee.

There are many exciting AMSAT projects underway around the world. In Germany a team is working on P3E "Express" a high orbit satellite which will carry a whole range of transponders plus a camera and other experiments. The Americans are working on "Eagle", another high orbit satellite, designed to complement P3E and provide nearly continuous satellite coverage. The local New Zealand AMSAT group is working on Kiwi-Sat and was able to demonstrate a working "space ready" FM transponder at the last NZART Convention.

Modes and bands

The amateur satellites of most interest are those which carry transponders for relaying signals back to Earth. Some satellites carry linear transponders, which allow multiple users and transmission types, including SSB, CW, FM, SSTV, PSK and Domino. Some have FM voice transponders, which work like a cross band repeater channel and some satellites carry digital transponders, which receive and then transmit, regenerated digital data. Digital transponders are usually used for packet BBS, digipeaters and APRS.

Most satellite operation uses the satellite portions of the 2 m and 70 cm bands. Currently only AO-51 "Echo" has the capability to operate on L band (1268 MHz) and S band (2401 MHz). The P3E "Express" satellite, due for launch in 2007 is proposed to have transponders on bands ranging from 29 MHz to 47 GHz.

Satellite transponders are often referred to by "mode". Rather than referring to the type of transmission SSB, FM etc. this relates to the frequency bands used by the satellite transponder. VU mode means that the satellite uplink is on VHF band (2 m) and downlink is on UHF (70 cm). Conversely UV mode means that the satellite uplink is on UHF band (70 cm) and downlink is on VHF (2m). LS mode has a 1268 MHz uplink and a 2401 MHz downlink. The old AO-7 era "mode A" is now VA and "mode B" is now UV.

Some linear transponders are "reverse tracking" so that as the uplink frequency increases, the downlink frequency decreases. Generally this type of transponder is also "inverted", ie the sidebands reverse so that LSB input to the satellite becomes USB on the downlink.

Equipment requirements

The minimum requirement for transceivers is a dual band FM handheld, but for serious satellite work a multi-mode transceiver capable of full duplex crossband operation (2 m/70 cm), such as the Yaesu FT-847, Icom IC-910H or Kenwood TS2000 is desirable. Alternatively the station can consist of separate all mode transceivers for 2 m and 70 cm. Some satellites have a mode A downlink, which would require a 10 m HF receiver. L band operation can be achieved with a transmit converter, or some transceivers have optional built in L band transverters. S band operation is usually achieved using an S band to 2 m or S band to 70 cm down-converter mounted at the antenna.

For working LEO satellites Yagi antennas, five-elements on 2 m and 12-elements on 70 cm are quite acceptable. It is best if these can be pointed at the satellite using an Azimuth/Elevation rotator. The minimum antenna configuration is an omni antenna such as a colinear, discone or turnstile antenna. Almost any antenna capable of working on 70 cm and 2 m will get you started on the FM satellites when they are at high elevations. There is a significant advantage in using circular polarised antennas for satellite work. Circular polarised antennas minimise the effects of cross polarisation fading caused by the satellites' changing position, possible spin modulation (fading due to satellite rotation), and on

HEO satellites a small amount of Faraday rotation. The convention is to use antennas made with right hand circular polarisation (RHCP).

For HEO satellite operation high gain circular polarised (RHCP) antennas such as crossed Yagis, loop Yagis, or helix antennas are required. For S band (13 cm) operation dish antennas fed with small helix or circular polarised patch feeds are normal, although helix antennas are sometimes used. For L band (23 cm), helix or dish antennas are usually used.

Satellite tracking

To work stations through the HAMSATS, you need to know when the satellite will be above the horizon and where to point your antenna(s). Most satellite operators use one of the many satellite tracking programs available on the Internet. Programs include Instant Track, Wisp, Orbitron, Nova, Winorbit, Satscape and SatPC32. Current favourite is probably SatPC32 which offers rig control with automatic Doppler correction, rotator control, tracks multiple satellites, shows the ground track and satellite coverage footprint. If you have not installed tracking software, you can get a display of the next 10 passes for many amateur satellites by using the "Passes" tool on the AMSAT web site.

Three things are critical for accurate satellite tracking. Firstly the tracking program will need your QTH location, latitude and longitude. Some software can calculate your location from your Maidenhead grid square. Secondly the program will need up to date Kepler data, which can be downloaded from AMSAT, Celestrak or other web sites. The Kepler data describes the orbit of the satellites. Finally the clock on your PC needs to be accurate. A two-minute error on your PC clock could see your antenna pointing 36 degrees away from the true position of the satellite and of course the Doppler adjustment would also be way out. Utilities such as Dimension 4 can reset your PC clock very accurately. Kepler data should be updated at least monthly.

Glossary

—AOS—acquisition of signal. Time the satellite appears above the horizon.

—LOS—loss of signal. Time the satellite sets below the horizon.

—Uplink—the signal you send to the satellite.

—Downlink—the signal you receive from the satellite.

—Mode—frequency band of uplink and downlink (UV, VU, LS, VA).

—Pass—the time the satellite is above the horizon and can be used.

—Passband—frequency range of a transponder (FO-29 has a 100 kHz passband).

—Beacon—most satellites have a fixed CW or telemetry beacon transmitter, some have several.

—Transponder—A transponder is a wide band linear repeater. It accepts a range of frequencies on the input and retransmits the entire range on the output.

—Repeater—a single frequency transponder, just like a standard FM repeater except it works cross band. All satellite repeaters and transponders are full duplex, meaning you can and should listen to your signal on the downlink while you are transmitting.

—Digipeater—a transponder which regenerates a digital signal and retransmits it on another frequency. As opposed to a repeater which does not regenerate the digital signal.

—Pilot tone—some FM sats need a tone, usually 67.0 Hz on your transmission to open the satellite receiver squelch. Most modern rigs can generate these DCS tones. AO-51 needs 67.0 Hz. SO-50 needs 74.4 Hz for a few seconds to turn on a 10 minute timer, then 67.0 Hz on each transmission.

—Inverted—The satellite receives on LSB and transmits on USB. Generally inverted transponders are also "reverse tracking".

—Reverse tracking—The downlink frequency increases as the uplink frequency decreases. Generally reverse tracking transponders are also "inverted".

—Kep data—Reference Kepler data downloaded as a text file

—Doppler—frequency shift caused by the speed of the satellite relative to your position.

—Analog satellite—satellite transponder for voice or cw, (or audio based digital transmissions like SSTV, Domino, PSK).

—Digital satellite—satellite transponder for digital modes often AX25 FSK, used for APRS, often carry bulletin boards, digipeaters or packet store and forward.

—ISS—International Space Station.

—ARISS—Amateur Radio aboard the International Space Station.

—perigee—satellite orbit closest point to Earth.

—apogee—satellite orbit farthest point from Earth.

—Footprint—area covered by a satellite's antennas. Higher satellites have bigger footprints.

—Spin modulation—fluttering or fading caused by the satellite spinning or tumbling.

—Attitude—angle of the satellite with respect to Earth.

—Squint—angle of satellite's antennas with respect to your location. (If the satellite's antennas point straight down they are not pointing directly at your QTH.)

—OSCAR—Orbital Satellite Carrying Amateur Radio.

Web pages

AMSAT NA main page

<http://www.amsat.org/amsat-new/index.php>.

AMSAT satellite status

<http://www.amsat.org/amsat-new/satellites/status.php>.

AMSAT download Kepler data

<http://www.amsat.org/amsat-new/tools/keps.php>.

AMSAT satellite pass predictor

<http://www.amsat.org/amsat-new/tools/predict/>.

Amateur radio satellite history

<http://www.spacetoday.org/Satellites/Hamsats/HamsatsBasics.html>.

<http://www.amsat.org/amsat/sats/n7hpr/history.html>.

OSCAR 7 Log and resource page

<http://www.planetemily.com/ao7/main.php>.

Kepler data and related tutorials & information

<http://celestrak.com/>.

General interest satellite site and Kepler information

<http://www.mindspring.com/~n2wwd/html/amsat_keps.html>.

Dimension 4 - reset PC clock to atomic standard

<http://www.thinkman.com/dimension4/>.

SatPC32 home page

<http://www.dk1tb.de/indexeng.htm>.

100s of satellite related links

<http://on6sat.com/links/>.

Kuhne Electronic—dealer web site

<http://www.kuhne-electronic.de/english/frameset.htm>.

Down East Microwave—dealer web site

<http://www.downeastmicrowave.com/>.

SSB Electronic USA—dealer web site

<http://www.ssbusa.com/>.

Currently Operational Amateur Radio Satellites

The following satellites carry operational transponders as at August 20, 2006. For operating information see the frequency list and the AMSAT web site.

AO-7 AMSAT OSCAR 7

AO-7 was launched November 15, 1974, it is the oldest HAMSAT in orbit and is still operating after an amazing 32 years in space. AO-7's batteries are dead, but the satellite transponders will work, powered by the solar panels, while the satellite is in sunlight. Uplink power must be kept to an absolute minimum otherwise the current drain exceeds the power that can be supplied by the solar array and the satellite suffers from FM distortion on the downlink transmitter. As AO-7 resets each time it comes into sunlight, it can come up in either mode A, (VA) or mode B (UV) randomly each pass. There is also a timer which toggles the transponder mode. Recently AO-7 seems to be favouring mode B. Check out the AO-7 log and resource web site, and fill in the log even if you only heard the beacon or heard your own downlink.

AO-16 PacSat

AO-16 is a "semi-operational", VU and VS mode, 1200 bps AX25 digital satellite, with a packet digipeater for APRS. Callsign for broadcast is PACSAT-11. Packet BBS is non operational. AO-16 uplinks are made with a 2-Meter FM transmitter, while downlink reception requires a 70 cm SSB receiver. AO-16 accepts 1200 bps Manchester encoded FSK on any of its uplink frequencies. It transmits 1200 bps binary phase shift keying (BPSK). Current downlink is 437.051 MHz.

AO-27 EyeSat

AO-27 carries a VU mode FM voice repeater, but the transponder is only turned on while the satellite is over the northern hemisphere, so the satellite is of no interest to New Zealand hams.

FO-29 Fuji OSCAR or JAS-2

FO-29 is the most popular analog satellite used by ZL and VK hams. It has a 100kHz wide VU mode, linear transponder. Most QSOs are on SSB near the centre of the transponder, but SSTV and Domino modes have also been used successfully. The packet BBS and digitalker are no longer operational. FO-29 has a fairly weak beacon, on 435.795 MHz. The transponder is reverse tracking and inverting.

GU-32 Gurwin TechSat-1b

GU-32 carries a VU mode 9600 bps FSK digital Pacsat trans-

ponder for packet BBS and APRS use. The LU digital transponder is non operational. BBS call-sign is 4XTECH-12, Beacon call-sign is 4XTECH-11.

SO-50 SaudiSat-1c

SO-50 is an FM repeater in space. It has a mode V/U FM voice repeater with an uplink on 145.850 MHz and downlink on 436.795 MHz. SO-50 requires a user to send a short transmission with a CTCSS tone of 74.4 Hz to set a 10 minute timer. After that each transmission requires a pilot tone of 67.0 Hz to open the receiver squelch on the satellite. SO-50 can be tricky to wake up,

but when active is very sensitive. At high elevations it can be operated with a handheld dual band transceiver.

AO-51 Echo

AO-51 has the most transponders of any of the currently active satellites. It operates simultaneous digital and analog transponders usually in VU mode. For a few days each month other modes such as AU, VS, LU or LS may be operating. The normal analog transponder is an FM mode VU voice repeater, which requires a 67.0Hz pilot tone. The packet BBS and APRS broadcast transponder uses callsigns Broadcast: PECHO-11 and BBS: PECHO-12. For an up to date schedule check the AMSAT web site.

VO-52 Hamsat

VO-52 has two mode UV linear transponders but only one is active at any given time. If the cw beacon on 145.860 MHz is active the Dutch made transponder is operational, if the unmodulated beacon on 145.936 MHz is active, the Indian transponder is operational. Both transponders have the same 60 kHz bandwidth and similar downlink power. VO-52 has a reverse tracking, inverting transponder.

ARISS Amateur Radio aboard International Space Station

ISS carries an FM 2 m mobile for use by the crew for educational and amateur radio use. Mode VV uplink for Region 3 is 144.490 MHz and downlink for all modes is 145.800 MHz. Crew contacts are dependant on the spare time available to the space station crew. When the transceiver is not in use by the crew it is often setup as a 1200 bps AFSK digital transponder, with an uplink of 145.990 MHz and downlink of 145.800 MHz. ARISS is often used to relay APRS beacons and also carries a packet BBS. Recently the ARISS station has been transmitting SSTV pictures on a downlink frequency of 144.4900 MHz.

Amateur Satellite Frequency List

Frequency	Transponder Range	Satellite	Name	Mode	Service
144.490			ARISS	FM	Uplink
145.200			ARISS	FM	Uplink
145.800			ARISS	FM	Downlink
145.990			ARISS	FSK	Uplink
29.400	29.4000–29.5000	AO-7	AMSAT-OSCAR 7	SSB/CW	Downlink
29.502		AO-7	AMSAT-OSCAR 7	CW	Beacon
145.850	145.8500 - 145.9500	AO-7	AMSAT-OSCAR 7	SSB/CW	Uplink
145.975	145.9750 - 145.9250	AO-7	AMSAT-OSCAR 7	SSB/CW	Downlink
145.978		AO-7	AMSAT-OSCAR 7	CW	Beacon
432.125	432.1250 - 432.1750	AO-7	AMSAT-OSCAR 7	SSB/CW	Uplink
145.900		AO-16	AMSAT OSCAR 16	FSK	Uplink
145.920		AO-16	AMSAT OSCAR 16	FSK	Uplink
145.940		AO-16	AMSAT OSCAR 16	FSK	Uplink
145.960		AO-16	AMSAT OSCAR 16	FSK	Uplink
437.025		AO-16	AMSAT OSCAR 16	PSK	Downlink
437.125		LO-19	LUSAT-OSCAR 19	CW	Beacon
145.850		AO-27	AMRAD-OSCAR 27	FM	Uplink
436.795		AO-27	AMRAD-OSCAR 27	FM	Downlink
429.950		PO-28	POSAT-OSCAR 28	GMSK	Packet Downlink
146.000	146.0000 - 145.9000	FO-29	Fuji-OSCAR 29	SSB/CW	Voice Uplink
435.795		FO-29	Fuji-OSCAR 29	CW	Beacon
435.800	435.8000 - 435.9000	FO-29	Fuji-OSCAR 29	SSB/CW	Voice Downlink
145.850		GO-32	Gurwin-OSCAR 32	FSK	Uplink
145.890		GO-32	Gurwin-OSCAR 32	FSK	Uplink
435.225		GO-32	Gurwin-OSCAR 32	FSK	Downlink
145.850		SO-50	Saudi-OSCAR 50	FM	Uplink
436.795		SO-50	Saudi-OSCAR 50	FM	Downlink
28.140		AO-51	AMSAT-OSCAR 51	PSK	Uplink
145.860		AO-51	AMSAT-OSCAR 51	AX.25	Uplink
145.880		AO-51	AMSAT-OSCAR 51	FM	Uplink
145.920		AO-51	AMSAT-OSCAR 51	FM	Uplink
435.150		AO-51	AMSAT-OSCAR 51	AX.25	Downlink
435.300		AO-51	AMSAT-OSCAR 51	FM	Downlink
1,268.700		AO-51	AMSAT-OSCAR 51	AX.25	Uplink
1,268.700		AO-51	AMSAT-OSCAR 51	FM	Uplink
2,401.200		AO-51	AMSAT-OSCAR 51	AX.25	Downlink
2,401.200		AO-51	AMSAT-OSCAR 51	FM	Downlink
145.860		VO-52	VUSat-OSCAR 52	CW	Beacon
145.870	145.8700 - 145.9300	VO-52	VUSat-OSCAR 52	SSB/CW	Downlink
145.936		VO-52	VUSat-OSCAR 52	Carrier	Beacon
435.220	435.2200 - 435.2800	VO-52	VUSat-OSCAR 52	SSB/CW	Uplink
436.838		CO-55	CubeSat-OSCAR 55	CW	Beacon
437.470		CO-55	CubeSat-OSCAR 55	AFSK	Packet Downlink
437.385		CO-56	CubeSat-OSCAR 56	CW	Beacon
437.505		CO-56	CubeSat-OSCAR 56	GMSK	Packet Downlink
436.848		CO-57	CubeSat-OSCAR 57	CW	Beacon
437.490		CO-57	CubeSat-OSCAR 57	AFSK	Packet Downlink
437.345		CO-58	CubeSat-OSCAR 58	AFSK	Packet Downlink
437.465		CO-58	CubeSat-OSCAR 58	CW	Beacon

AN INTRODUCTION TO THE WORLD OF DX

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DXing is addictive

Probably the greatest lure in amateur radio is to contact someone else just a little further away. When you first start out into the world of DXing, DX may be 100 km but later you will work into every corner of the planet. With some it becomes an absolute obsession and they will go to any length to contact that country they haven't worked yet. For others, it is a pleasure to rag chew with an amateur in a foreign country, to learn more about that country and its culture. DXers often end up meeting other DXers when they travel and many lifelong friendships are made this way.

DXing is a competitive sport. You will find out the moment that you hear some rare DX that a thousand other hams heard that same station and are also calling at the same instant. The problem is that many of your competitors are outstanding operators with high power, excellent antenna systems and vast experience. Most of your competitors are average operators with average stations and antennas and they are easy to compete with. You just have to be a bit more cunning with your skills but eventually you can work up to competing with the top group. That rare DXpedition will usually work the big guns first and then you can easily make the contact at the end of their stay at the rare location.

Currently there are 335 DXCC "Entities" eligible for the ARRL DXCC award program. An entity can be as large as Australia or as small as St Peter and Paul Rocks out in the South Atlantic Ocean. There are rules that govern what constitutes an "Entity" and they may be found on the ARRL Website where you can find the rules for the various awards and download the application forms. *CQ Magazine* in the USA that runs the Worked All Zones awards program and sponsors major contests throughout the year has the rules on their website also. Usually you start off with trying to work the first one hundred countries or entities and that will be a milestone for you. It will teach you how to get involved with a pileup and how to be a bit cunning when you do. It will teach you that other DXers in other countries may not have the same sense of fair play as you do. The second 100 countries are a little more difficult to work. Achieving 300 countries is very difficult and will usually take many years. For a variety of reasons including sunspot cycles, rarity of the country and how often its government will allow amateurs to operate there. The last 35 entities are extremely difficult and very few ZL amateurs have managed to do it. But the challenge is always there and it becomes a passion to achieve it.

Strategies for successful DXing

There are some proven strategies that work. Listen to the operator and find out where he is listening and if he is working split frequencies. Working "split" is not difficult, just different. It's a new skill for you to learn. Find out where the thousands of other operators are transmitting and avoid the pack. Position yourself just off the edge of the pack. Refine your timing so that you will be heard in a "gap" rather than in with the pack. Placement and timing is everything. Your signal should be slightly out of the pack so you will be noticed and your call should be slightly out of sync with the pack... just delayed a bit so that he will hear you start your call but not delayed long enough that you are calling on top of the guy the DX station has already decided to work and is answering. Successful experienced DXers are extremely skilful with their timing and consequently work the DX. You may not be heard on your first call; you're second or even after a few hours of calling. Be patient! Sometimes it's an exercise in pure frustration but persistence usually wins and it's an absolute joy when you snag that new country. Top level DXing is not easy but you will learn that amateur radio is more than inhabiting your local 2 metre repeater. You will also be rewarded with friendships around the world and an understanding of other cultures.

Is CW worth the effort?

It really is true that it's easier to work DX on CW than on Phone because there are fewer stations clamouring for the attention of a DX station on CW. CW will still be around for the foreseeable future in spite of recent changes in amateur licence regulations around the world.

Weak CW signals are more readable than weak Phone signals. Hone your CW skills. DX stations often run 20 wpm or more and while most of them are courteous and will come back to a station calling at 12 or 15 wpm, it's very satisfying to be able to work them at the speed they're calling CQ. Life is much easier with an electronic keyer as it takes the work out of sending your call over and over. There is nothing worse than operating with a pair of uncomfortable, ill fitting, harsh sounding headphones. Invest in a good set of headphones to help you dig out the weak ones and avoid fatigue. A better idea is to buy a quality boom microphone headset with a good sounding microphone cartridge.

Work the contests

Contests can be intimidating, but your best chance for working new countries is often during the DX contests. Contest groups often will activate multi-multi stations in rare countries and they are easy to work. I recall working CN2R in Morocco on 80 m a few years ago. He was S9+ and begging for 80 m contacts and very easy to work. You don't have to work the entire contest, nor do you have to send in the logs for scoring. Figure out what information they're expecting you to exchange with them, either by listening to several contest QSOs or by reading the contest rules on www.contesting.com, then just jump in and start working stations.

What bands to operate

The seven popular amateur radio bands offer the DXer propagation to most parts of the world most of the time. When the sunspot count is low between the eleven year peaks, the higher bands like 10, 12, 15 and 17m are poor and opportunities are limited. 20, 30 and 40 m present excellent DXing providing you have good antennas. DXing is more difficult on 80 and 160 m because the ambient noise levels are often intolerable in urban areas. When the propagation is right and the bands are open at sunrise and sunset, 80 and 160 m can be extremely rewarding with worldwide contacts. We are fortunate here in the Asia/Pacific region as many rare DXpeditions take place and are easy to work on the lower bands.

When the sunspots reach maximum every eleven years the higher bands are magic. 10, 12 and 15 m are often open 24 hours a day and it is relatively easy to work 100 countries during a weekend contest. Having a ZL call is a wonderful asset. ZLs are reasonably rare in other parts of the world and there are not that many ZL DXers to compete with. ZLs are often the first "real" DX station that Europeans work. ZL DXers are respected around the world and we have some world class Kiwi DXers amongst us. It is not uncommon to call a CQ on 20 m and generate a pileup of Europeans or North Americans that may go on for hours.

Operating aids

The DXer has far more tools at his disposal than he had 30 or 40 years ago. Then, you heard a rumour, read monthly DX magazines or received a phone call from a trusted friend. You listened daily, you waited and finally you would hear that weak rare station and attempt to work him with primitive valve equipment. Today's modern DXers have computers with the Internet based newsgroups, real time packet clusters, propagation prediction programs and information not dreamt of by old timers in the game. Today one knows where and when the rare DX will operate. With a few mouse clicks the modern well equipped station will change the radio to that frequency and mode, track the amplifier to the right band, select the correct antenna system, turn the beam to the heading and set his call up in the logging program in a few seconds. Sounds easy! The reality is that you still have to use your skills to get your call in his electronic logbook. And it doesn't get any easier as thousands of other hams have the same technology. Below are some web links to programs and services that will help you work DX.

<www.ac6v.com/>—The definitive reference site for ham radio—Over 6000 links.

<www.dxatlas.com/> DX Atlas—A great program for DXCC, WAZ, IOTA info plus brilliant Grayline and path headings.

<www.dx4win.com/>—Excellent logging program.

<www.writelog.com/>—Excellent contest logging program.

<www.kc4elo.com/index.html>—Free but very good logging program.

<www.eqf-software.com/>—Some great logging programs.

<www.qsl.net/w6elprop/>—Propagation prediction (and it's free!).

<www.rchalmas.users.ch>—Packet Cluster program (and it's free!).

<www.nzart.org.nz/nzart/Lists/dx.html>—Subscribe to the NZ DX Newsgroup (it's free!) and you will be in touch with other keen DXers around New Zealand.

<www.cq-amateur-radio.com/

awards.html>—The *CQ Magazine* awards and contest website.

<www.arrl.org/awards/dxcc/> The ARRL DXCC awards and contest website.

<www.dxawards.com/book.html>—The K1BV Awards directory listing for 3227 awards.

<www.geocities.com/Athens/Parthenon/4205/xe1bef.htm>—Amazing website from Mexico with 20,000 links.

<www.oh2aq.kolumbus.com/dxs/>—Live DX cluster spots 24 hours a day.

<www.ac6v.com/morseaids.htm>—The definitive web page on Morse code—worth going to even if you don't understand it or use it!

Packet cluster networks

Packet clusters have been a phenomenon of the DXing world over the past 10 or 15 years. Basically it works like this. There may be a local VHF packet channel in a city in Europe somewhere and a group or cluster of hams are connected to it. When someone in the group works a rare station he types into his cluster software the details in the following format: DX 14015 ZD9BV Calling CQ. The last comment is optional. The message or "spot" immediately appears on the screens of all connected to that cluster. Most clusters are now linked to the internet and there are more than 1000 of them around the world in every populated area. As soon as that spot hits the internet it spreads to all the cluster nodes and you will see it on your screen in your shack. In fact you will see a continuous stream of DX stations, Announcements and WWV information on your screen 24 hours a day. New Zealand has access to DX packet clusters operating in most major cities and towns. Many of them are on 144.650 MHz (frequencies elsewhere in this Callbook) All you need is a VHF receiver and a simple modem capable of 1200 baud and the cluster software. There are many free programs available. DX packet clusters are a wonderful tool for chasing DX

Minimum-maximum station gear

There are some facts to consider when you are thinking about investing in equipment for your station.

(1) The operator on the other end can't tell whether you have the latest all singing, all dancing multi featured transceiver costing in excess of $8K or a 30 year old valve radio you picked up at a junk sale for $300. 100 W is 100 W. Both are equal. The only difference is that the older radio may not have all the latest modern features.

A well-equipped DX/Contesting station.

(2) The stations with the 30 m towers and stacked 5-el monobanders driven by very large amplifiers will often beat you in a pileup. These are the guys that work the rare DX first and they love doing it. After they have done it ... they go away and let the rest of us work the station. As long as you are aware of the big guns, it's not a problem because time will be kind to you.

(3) The stations that have the "best" sounding audio will always win in a pileup. It is human nature that the DX station will always take the path of least resistance and work the station he can understand and clearly hear the easiest. Best means clean, punchy and standing out from the rest. Commercial broadcast announcers are picked because of their mellow authoritative voices. Be aware of your own limitations and strive for the best audio you can generate. An authoritative voice helps!

(4) With CW—You will need an electronic keyer and clean keying set a bit below the pack's general speed. This is better than trying to impress the DX station that your electronic keyer can do 45 wpm with ease. He can't!—Well, actually some DX ops can but they are rare.

(5) At the end of the day everything helps, but don't get hung up on particular antennas or brands of radio equipment. They are only part of the picture. A good antenna is the second best investment you will ever make. The first is taking the time to learn the techniques and skills of how a rare DX station thinks and operates. A cunning operator will outwit a big antenna every time!

The process of QSLing

If a newcomer to DXing starts out by working DX stations during contests he will quickly learn that he will work key countries multiple times. I would make the bureau one of my first choices The QSL Buro Service here in New Zealand is excellent and it will save you postage costs. My best advice is to save your postage dollars and greenstamps for your rare station direct QSL requests. Confirming DXCC takes time anyway, and by the time one gets close to 100 different confirmed countries, several months or years will pass. As one begins to find QSL cards in the mailbox, it is good to be prepared. There are several systems of filing, and the one that is probably the most common is to keep QSLs in order by DXCC entity. Shoeboxes help and they are inexpensive. There are some neat boxes sold buy the big chain stores here in New Zealand to file photographs in and they are excellent for QSLs. Keeping QSLs in DXCC entity order is the first step in being able to find and sort cards for awards later down the line. Believe me, it is not an easy task to sort a couple of thousand QSLs from scratch. Be smart and start sorting at the very beginning.

Computer logging

Computer logging programs are almost essential for those who have a large number of QSOs. Over time they become one of the best tools around for keeping things in order. Don't start out with a cheap shareware logging program. A key factor in a logging program is to be able to display various award details in DXCC entity order as one has them worked or confirmed. The main prestige awards are DXCC, WAZ, DXCC Challenge, WAS, WAC, IOTA There are thousands of others.When one wants to see how their goals are being met, they can look at their statistics right on the computer screen. Computer logging programs are a great time saver because most of them generate labels that will save hours and hours of handwriting. They can keep track of QSLs sent and received with just a click. A really good computer logging program will do all of the above and control your radio, send CW, display your local packet cluster DX spots and print the QSO information directly onto your QSL cards with no labels involved.

Awards and rewards

ARRL DXCC CQ 5 Band WAZ

ARRL 5 Band DXCC No 1 Honour Roll (All 335!) 5 Band Worked All States

There are over 3200 awards available to wallpaper your shack. Only a handful really measure how well you compete with other DXers around the rest of the world. They are the prestigious ARRL DXCC awards, the CQ DXCC and WAZ awards, the RSGB IOTA and Dxing awards and the European WAE (Worked all Europe) awards. In fact the list of awards that can be earned for working certain collections of DX stations is almost endless.

<http://www.ac6v.com/> will give you a link to the universal awards page.

The picture shows Number 1 Honour Roll plaque for working all 335 DXCC entities. Only a few ZLs have managed to achieve this prestigious award. We have some world class

DXpeditions

If DXing is an obsession, then DXpeditioners comprise the lunatic fringe of the DX world. At any given time there are hundreds of amateurs operating from rare locations around the world. You can be assured that there are thousands of others actively planning a DXpedition somewhere and hundreds of thousands of "armchair DXpeditioners" who would love to go. Planning a major Dxpedition is almost as complicated as a NASA mission. Large scale modern DXpeditions can chew through $100,000 or more in no time so it isn't a project that any group of enthusiasts will take on lightly. New Zealand just happens to have ten or more of some the rarest DXCC entities islands within its territory. ZL7—Chatham Island, ZL8—Raoul Island and ZL9—Campbell and Auckland Islands are usually in the top 25 most wanted entities. There have been major DXpeditions by New Zealanders to all these locations during the past ten years but the demand continues unabated. Opportunity abounds for ZLs to organize more trips to these desired locations. I can assure you there is nothing as sobering as a huge pileup of thousands of unruly Europeans on 20 metres calling you to make that elusive contact. It is frightening but is also the experience of a lifetime to participate as an operator on a DXpedition. The camaraderie and experience gained is incomparable. DXpeditions to ZL7 are easily organized and are tremendous fun and are to be recommended for gaining experience.

When you consider all these factors, it is no wonder that DXing is so popular Even though we are only a couple of years past the fabulous conditions during the peak portion of sunspot cycle 23 there is always rare DX around to be worked. The next few years will not be as good for HF DX. On the other hand DXing on 80 and 40 metres will be easier. Have patience as sunspot cycle number 24 will peak in a few years from now and again provide fabulous world-wide propagation. I am trying to provide tips and information in this section to help you succeed in DXing, whether you are a newcomer to DX or a DXing veteran. If you would like to find out more about DXing, contact me at <leejen@paradise.net.nz> and I will be happy to put you in touch with DXers in your area. You can also subscribe to the NZDX Newsgroup by going to <www.nzart.org.nz/nzart/Lists/dx.html>.

EMC—Electromagnetic Compatability

by
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ZL2CA

Electromagnetic compatibility (or EMC for short) may sound as if it is a new topic, but it has actually been around ever since electrical equipment was first developed. Electricity, electronics and radio each have numerous applications, but there needs to be recognition of compatibility between various systems. In the case of amateur radio, the possible impacts of operating a transmitter is the most obvious situation to consider for compatibility. EMC can be regarded as having two parts:

- EMI, electro-magnetic interference, where disturbance results from an emission
- EMS, electro-magnetic susceptibility, where exposure gives degraded performance

Should EMC problems arise then there is usually some sort of trade-off to consider by affected parties:

- Is the problem due to transmitter emission deficiency?
- Is the problem due to susceptibility (even with a "clean" emission)?
- What are the choices to solve the EMC problem?
- What are the costs of EMC treatment?

There should be very few, if any, circumstances where an amateur operator is forced to cease operation solely because of EMC difficulties. The end objective of clearing EMC problems should be to develop a practical result that is acceptable to all affected parties. There are advantages for amateur operators who are conversant with EMC causes and cures, as they can put their knowledge into practice should an EMC problem crop up with their station, or help others.

C-tick and compliance in New Zealand

Electrical products for sale in New Zealand are regulated by "C-tick" compliance. Appliances with a C-tick should meet standards for control of RF emissions (even for apparatus that has no intended emission). While the C-tick arrangement is generally good for minimising "RF fog", the compliance limits are mainly to protect broadcast service reception, which involves fairly solid wanted signal strengths, so compliance with C-tick may still be well above the noise floor of a sensitive amateur receiver with an antenna near the appliance in question. C-tick is silent on RF susceptibility.

EMC compliance in other countries

FCC Part 15 Class B covers emissions for apparatus intended to be used in residential situations, and is very similar in emission limits to C-tick. FCC Part 15 Class A caters for industrial apparatus and has higher emission limits than Class B. The European CE standard includes emission and susceptibility testing, so could be said to reflect a wider scope than C-tick.

Some basic physical factors for electric and magnetic fields

EMC is fundamentally to do with electric or magnetic energy interactions. It is generally desirable to keep one circuit sensibly isolated from another, but sometimes coupling may arise in unforeseen ways. Coupling could be by any or all of the basic mechanisms, namely:

- Conduction (by electron currents flowing in physical conductors)
- Induction (by way of electric or magnetic flux linkages)
- Radiation (by way of electromagnetic fields)

Radiation is of course an intended part of communication by radio, so the EMC challenge is to carry out amateur radio activities with minimal unwanted interaction with other equipment or services.

In the vicinity of a transmitting antenna there are magnetic and electric energy fields that are a complex combination of reactive (stored) and radiated (outgoing) components. The specific reactive and radiated components depend on the type of antenna. The strength of the near field falls away quite rapidly with increasing separation from an antenna (that is transmitting). Increasing the separation distance is always a winner for reducing EMC problems. Even with EMC problems inside the shack, like one piece of equipment affecting another, it is often surprising that even a modest separation can achieve a significant reduction in the original problem.

When it comes to suppressing unwanted signals, it is usually best to work on finding the root cause and trying to stop the unwanted signal from travelling away from the source. While prevention is better than cure, if the unwanted signal can not be prevented from developing then the next strategy is to minimise the ways in which it may spread.

EMC countermeasures include the following techniques:

- Shielding (solid metal, even double screening)
- Bypassing (usually a suitable capacitor)
- Filtering (suitable series and shunt components)
- Suppression (usually within the equipment itself)

Note that many types of plastic equipment cases are transparent to RF and have useless shielding properties.

Low pass and band pass filters

Filters are one of the basic electronic building blocks that can make the difference between communications being satisfactory or unsatisfactory. There are many types of filter, designed for many applications and for many source or load impedances. Refer to a radio handbook for details on filters. Proper use of filters is central to solving many types of EMC problem.

A low pass filter in the antenna feeder can be a useful accessory for an amateur HF station. Using a low pass filter between a transceiver and the antenna can give a certain confidence to operating, as it generally results in "overkill" of possible harmonics or other unwanted emissions that happen to fall within television channels used in a given area. Without the low pass filter, some unwanted signals may make it to the antenna and thence have a good chance of spreading to local television receivers.

Be wary of the specifications of cutoff frequency for low pass filters made for HF operation. Some types of low pass filter are designed for protecting television broadcast bands used in other countries. In Europe and the USA the lowest band edge for television is 54 MHz. However, in New Zealand, television Channel 1 has a lower band edge of 44 MHz. For New Zealand television Channel 2 the lower band edge is 54 MHz. For amateur HF operation, the low pass filter should pass all of the 10 m band, but then start cutting off at higher frequencies, and have high insertion loss at the lowest television channel in your area. It so happens that some USA manufactured low pass filters are designed to include control of unwanted signals that fall in the USA television receiver IF (in the mid 40 MHz range), and these types specify high attenuation above 41 MHz, so are obviously an appropriate type of low pass filter to use anywhere in New Zealand.

Band pass filters can be useful for some amateur situations, such as for reducing strong non-amateur signals from getting into and overloading amateur receiver front ends. Field days or contests with multi-transmitter multi-band operation are examples where extra RF filtering is very useful.

Antenna considerations

Antennas are really the key to achieving overall effective performance of an amateur station. For nearly all types of antenna, the radiation efficiency and general effectiveness improve with antenna height above ground-level. The following factors can apply to high antennas:

- DX performance is usually better, on any band
- For receiving, gives some separation from local sources of QRM
- For transmitting, gives less exposure to ground level equipment or people
- Can run lower transmitter power and still sustain communications.

Ground-mounted vertical antennas have a reputation for having near fields that are "hotter" than those for other types of antennas. In a suburban situation, ground-mounted verticals tend to have strong radiation directly into nearby houses. By the reverse of what can happen on transmit, on receive these ground-mounted verticals can easily receive neighbourhood QRM. While verticals can be effective for communication on the lower bands, they are unfortunately also potential candidates for EMC problems in built-up areas.

Horizontal centre-fed dipole antennas are inherently much more balanced in operation than ground mounted verticals. Dipoles have surrounding flux patterns that are similar in shape each side of the centre feedpoint. The actual balance of the near field of a dipole depends on the angle from which the dipole is "viewed". A dipole viewed "side-on" presents good balance but viewed "end-on" the near side of the dipole predominates over the far side. On transmit there are unavoidable high voltages (and high field strengths) around the dipole ends. This is also the case for any antenna with an "open end".

Loop antennas are inherently one of the most balanced of all antennas. Much of the near field flux is contained within the loop. A loop antenna has a more confined near field pattern than is the case with dipoles. Loop antennas are widely reported as being quieter on receive than other types of antennas, yet are still effective

for transmitting. This is basically due to the reduction in near field size and consequently reduced impact of neighbourhood QRM. Loop antennas tend to be the better performers in the tougher EMC circumstances. A one wavelength loop can also work on near multiples of wavelengths, and with a tuning unit it can be useful on most bands. A smaller sized frame loop antenna can be useful for reception, when sited in a low noise location and with orientation to make use of the nulls broadside to the frame.

Antennas can develop corrosion in connections, or fatigue breaks in some strands of a multistrand wire. A bad connection or intermittent touching in a fatigued wire not only impairs performance on receive, but can cause arcing when transmitting. Arcing generally results in broad band interference and is obviously an undesirable situation. Even the best filtered transmitter in the country can cause EMC problems if there are bad connections in the antenna. Well-constructed and well-maintained antennas generally give least EMC problems. As always, antennas should be mounted "in the clear" for best communication results and least invitation for EMC problems where RF power couples into surrounding structures.

Transmitting antennas and feeders should be kept away from television antennas or downleads as otherwise it invites large levels of amateur band signals arriving at the television receiver front end.

Desirability of using a balun with a balanced type of antenna

Even if a balanced type of antenna is selected for use, the actual balance of the overall antenna system depends on how the feeder is connected. If the feeder is coaxial cable then using a balun (balanced to unbalanced transformer) at the antenna feedpoint is one way of minimising RF current from flowing back down the outer of the coaxial cable rather than into the antenna proper. As well, a balun can minimise noise from travelling up the outer of the coaxial cable and making reception seem worse than it would be without the unwanted noise. Another technique for reducing the affect of the coaxial cable braid is to use an RF choke, typically by having a string of good-fitting ferrite toroids over the feeder. For making your own balun or choke, refer to an appropriate handbook.

Active antennas

An active antenna can be useful as a receiving antenna, especially where there is some localised interference. Active antennas are usually physically small and smaller size is associated with a smaller near field. While a transmitting antenna usually has "full size" dimensions for radiation efficiency reasons, when used for receiving the larger size may be worse for pickup of local interference. The main criteria for an effective active receiving antenna is that the delivered result has atmospheric noise (QRN) dominating over electronic noise (noise from the active antenna devices). It is possible for a one metre whip and a JFET input pre-amplifier to be an effective active antenna over the MF and HF bands. Siting the active antenna away from houses and power lines can often deliver a better signal to noise ratio of a wanted radio signal than for reception using a "transmitting" antenna.

An active whip can be broadband. Frame loops can also be used as active antennas, but usually need to be tuned for best results. A fairly long feeder is possible as the head-end can incorporate enough active gain to compensate for some line loss. A multiwire cable is needed if power supply, tuning voltages and band switching control all need to be fed from the shack. If the power supply is mains powered, it needs to be carefully designed to resist breakthrough of mains-born noise. Obviously the active antenna electronics need to be designed for good linearity (low intermodulation) and survival from exposure to high signals (on-site transmission from another antenna). Great operational care should be taken to not inadvertently transmit into an active antenna, as such an experience usually renders it quite inactive until repaired. Transceivers with externally looped receiver input are ideal for selecting other receiving antennas, and not exposing any to risk of a possible direct connection to a transmitter.

Commercially manufactured transceivers

These days there are a great many commercially manufactured transceivers used by amateur radio operators. While it is a shame that home construction is less popular than in yesteryear, it should not be overlooked that the commercial "appliances" bring with them a reasonably high standard of performance in terms of suppression of harmonics and other types of unwanted emissions. Nearly all commercial transceivers include a good modulating stage, good signal filtering and a reasonably designed power output stage. In some countries there are regulatory requirements for limiting unwanted emissions, so commercial transceivers need to be designed for sufficient suppression of unwanted emissions if they are to qualify for marketing in those countries. The general result is that "big name" manufacturers tend to have good pedigree for EMC, as they seek international sales potential for their products.

Power supply considerations

The humble power supply should not be overlooked as a possible EMC situation. For example, on-site hum modulation can occur when RF gets into mains rectifier diodes. The resulting hum modulated signal then escapes by the reverse path of how it entered the power supply. Regulated power supply action may malfunction should RF be conducted into the circuit via AC or DC power leads. General treatment for HF EMC problems is to use 0.01 µF disc ceramic capacitors to "bypass" all leads and semiconductors, but of course they should be checked for not slowing down the response of electronic voltage regulators being able to follow variations in current drawn from the supply. VHF EMC problems should be treated with lower value "bypass" capacitors, or even metal shields. Do not skimp on safety ratings with capacitors used on mains leads (if a capacitor is not marked as being 230 V AC mains rated, then do not use it on mains wiring). Winding AC or DC leads on ferrite toroids can also be effective at reducing RF getting into a power supply or into equipment connected to the power supply.

Hum loops can be a problem when several separate pieces of equipment are connected up, as the grounded conductors in connecting leads provide a web of paths in which earth return current is able to flow. Power supply currents sharing conductors with low level audio signals is a recipe for coupling unwanted hum and noise to the audio feed. A very effective way of controlling power supply hum loops is by using split bobbin power transformers and two wire mains leads. A split bobbin transformer with a double insulated rating is legally able to be used with no earth wire, thus a potential hum loop via the mains earth is entirely avoided (for safety reasons this is not a technique to try with other than the proper rated split bobbin type of transformer). An isolation transformer in series with an existing power cord can be used with equipment that does not have a split bobbin transformer in its power supply. Isolation transformers have highest isolation at lower frequencies, and are limited by primary to secondary coupling capacitance in restraining higher frequencies from "jumping" the windings.

Switch mode power supplies may give high efficiencies and small package size, but there are inevitably "hash problems" for lower bands and harmonics of the switching rate to spot frequencies in several bands. One innovation in a commercial switch mode power supply is to have a front panel "tuning knob" so the switching rate can be optimised for minimal interference falling on a given working frequency (and needs readjusting as appropriate). Having a tuning knob does nothing to reduce the generation of hash or harmonics but arranges for them to be steered to least harmful spots on the dial.

Limitations of inductors

High frequency inductors are sometimes rated by the manufacturer for operation over a specified frequency range. This is a realistic reflection that unavoidable interwinding capacitance results in self-resonance at some relatively high frequency, and also for losses in core or coil former material. For frequencies above self-resonance the "inductor" appears to behave more like a capacitor, and explains why some filters may not deliver the expected results at higher frequencies. What is intended on a circuit diagram and what happens to an installed inductor may not achieve the intended result. Inductors need to be carefully selected if wideband performance is sought.

Limitations of capacitors

Capacitors also become self-resonant at some high frequency, when resonance occurs with unavoidable inductance of the leads and body. All lengths of conductor have some inductance, so it is impossible to build a perfect capacitor that would work at any frequency. However, capacitors are generally useful over a much wider frequency range than is the case for inductors. Disc ceramic capacitors are generally the best all round performers for HF and VHF work. The rated upper frequency range of mains bypass capacitors is sometimes no more than a few megahertz. Polystyrene or polypropylene capacitors are generally the lowest loss type of capacitor in the audio and lower frequency bands.

Ferrite and powdered iron components

There are many types of ferrite and powdered iron cores, and care is needed to end up with an appropriate type for a given application. There is quite a difference between selecting a core for a low loss RF transformer and using a core to attenuate unwanted RF signals. Transformer cores working at signal frequencies generally require selection of a given type of core material that has low loss in the fre-

quency bands of interest, especially where RF power is involved. With tuned transformers, high Q mode of operation is possible. However, for EMC applications ferrite material is generally selected as being well above the frequency range that it would be used as a transformer core, as low Q absorptive mode of operation usually gives best EMC performance. A low Q choke is like having an inductively coupled series resistor in the circuit.

Split-core ferrites can easily be fitted over existing wiring, and can effectively add a series impedance to higher frequency signals in the wiring. Split-core ferrites are widely used commercially, for the likes of reducing radiated noise from computer cables (especially in the VHF television bands). The split core (when fitted properly over a wire or cable) is equivalent to a one turn inductor with a toroid core, so not unexpectedly has fairly low impedance at lower frequencies, so does little to reduce conducted noise that happens to fall in the 160 or 80 metre amateur bands. Several turns on a high permeability core are needed for there to be useful attenuation in the MF and lower HF bands.

While ferrite material usually has a much higher permeability than powdered iron, it generally does not have the good power and linearity ratings that are available with powdered iron. Powdered iron is a core material widely used for inductors in transmitter output filters, and most of these are in toroid (ring) form. Toroid cores are ideal for keeping most of the magnetic flux within a closed path (around the toroid) which not only leads to fewer turns for a required value of inductance (thus higher Q) but also minimises the flux that possibly links with other circuits. Flux leakage can lead to EMC problems.

Powdered iron cores are colour-coded as to recommended frequency bands, and care should be taken to select the right material and core size (power rating) to do the intended job. Any core that runs into saturation can worsen rather than improve the signal quality being applied to what is hoped to be a filter (saturating cores are similar in effect to peak clipping in amplifiers, so core saturation is obviously a situation to be entirely avoided in a filter circuit).

Telephones

Telephones are not intended to be used for RF modulation monitoring, but unfortunately too many of the newer types of electronic telephone have poor rejection of RF. Telecom rental telephones (identifiable by a Rentel type number) were developed with RF immunity as one of the performance considerations, however stocks are running out and not being replaced. It is difficult to offer useful EMC advice on selections of telephones for private ownership, as there are so many types of telephones in use, with new ones appearing, and marketing for low cost likely cuts corners in the specific area of RF immunity.

Controlling RF pickup in audio amplifiers

The input stages of audio amplifiers can act as crystal sets and detect RF that happens to arrive with good level at the input device. The detected parts of the RF envelope that are in the audio range can thus be amplified by subsequent audio stages. A useful way of reducing RF arriving at the first audio stage is to use a series resistor followed by a parallel capacitor to equipment chassis (local earth). A resistor of a few hundred ohms (but could be as much as 10 per cent of the amplifier input resistance) and a capacitor of a few hundred picofarads (but with a reactance that does not significantly reduce the level of the highest audio frequencies) can be very effective at controlling RF breakthrough. A suitable value series resistor is considered to be a more consistent performer than an RF choke (RFC). This is because the resistor retains its effectiveness over a very wide bandwidth, whereas the RFC may offer too little reactance to be effective at lower frequencies and become self-resonant below the desired upper frequency limit of operation.

Speaker leads also act as unintended aerials. RF pickup in the amplifier can be reduced by winding the speaker leads on a ferrite rod or ferrite toroid (this of course uses up some of the length of the speaker lead).

Computers and amateur radio

Many amateur operators use a computer in the shack. The computer motherboard involves a myriad of high speed digital signals for clocking and data processing, so there is usually very high potential for interference to be experienced by a nearby radio receiver. The power cord, keyboard cable, printer cable, mouse cable, monitor cable and COM port cables are also possible ways that "computer hash" can escape. The computer monitor (CRT screen) necessarily has magnetic deflection fields that do not stop at the outside of the monitor enclosure, and high bandwidth video drive signals may also be noticed on nearby radio receivers. Nearly all computers and monitors use switchmode power supplies, which can also be "hash generators" from a radio perspective.

Before considering purchase, look for FCC or CE markings, or otherwise confirm compliance with known EMC standards. Taming interference within a computer would be beyond the scope of any warranty offered on a computer, and also be a difficult challenge. Having a portable radio with frequency coverage on bands of interest is one way of evaluating relative interference in a shop situation. Listening out on AM is much more informative than receiving on FM mode, and having an analogue S meter is useful for comparing levels. Some computers are quite acceptable for running in the shack alongside radio equipment. However, a "bad" computer can be an irritation to amateur radio operation.

Some switched mode power supplies have little or no internal RF filtering and these can be quite bad for causing local interference. Fitting an external mains filter is generally not as effective as having the filtering components inside the computer case. One way of improving such a situation, but without getting down to soldering iron level, is to change the power supply module for one that is known to include RF filtering. Many types of power supply can be directly interchanged, as there is a common standard for plugs and voltages. The main things to look out for is whether the power supply is AT or ATX, and whether the power rating is sufficient.

Split core ferrites are widely used for controlling unwanted signals on cables attached to a computer, however the suppression achieved is higher in the VHF broadcast bands rather than the MF or HF amateur bands. Several turns on a high permeability core is needed for best suppression at HF.

For radio data modes such as RTTY, packet, Amtor or Pactor, it is easy to for "buzzing noise" to get into microphone circuits unless audio isolation transformers are used (no conductive path between input and output, like a "braid-breaker"). Telephone style isolation transformers are ideal for using in a radio interface unit, as they have relatively high voltage isolation specifications. PTT control can be implemented with a suitable opto-isolator. Having a means of adjusting audio level is also handy, as computers can generate volts of audio drive and microphone inputs can easily be overloaded.

A lap top PC can have a very low level of overall radio noise. LCD displays are lower energy than cathode ray tubes, and lap top PCs generally have compact and well-shielded modular construction. In some cases an external switch mode power supply can be the worst interference generator in a laptop PC setup. An external power supply can be replaced by a low noise linear regulated power supply with the same DC output.

NZART
working for you—publications, videos, information

AREC AMATEUR RADIO EMERGENCY COMMUNICATIONS

MISSION STATEMENT

To be the preferred provider of emergency communications to New Zealand Emergency Services.

The AREC was formed in 1932 following a devastating earthquake in Napier. Today, the AREC consists of 74 Sections throughout New Zealand, each with its own Section Leader who is responsible for the training and conduct of the Section. Each Section is attached to a Branch or Branches of NZART, from where members are drawn.

Management of the AREC is vested in a National Director who is appointed by NZART Council. The National Director likewise appoints a Deputy, Secretary, Training Officer and Managers for the four districts. These eight people form the AREC Management Group.

The current objectives are:

★ To train and provide communications personnel, skilled in assisting organizations during emergencies.

★ Maintain a close liaison with the New Zealand Police for Search and Rescue.

★ Maintain a close liaison with Civil Defence.

★ Maintain a liaison with community organizations.

★ Provide and maintain equipment appropriate for emergency operations.

National Director AREC controls the issue of AREC Station Identifiers, formally known as "E" call-signs. AREC Sections are listed in this publication, in identifier order, along with their Section Leaders and Deputies. The Section Identifier, in its basic two letter form, is issued to the Sections' Leaders for their use only. AREC Station Identifiers for Section use are then issued by the Section Leader for that operation/exercise, with the following being normally reserved:

"A" = Section Base Station
"X" = Established Relay Stations
"Z" = District Control Stations

AREC operators engaged in SAR activities and operating on SAR frequencies are to use the call-sign allocated for that operation/exercise. This call-sign is to reflect the geographical location (nearest town) of the search area. Civil Defence's radio call-signs are controlled by the CD organization.

AREC emergency frequencies

The following frequencies are reserved for AREC use in emergencies:

1875–1900 kHz
3500 and 3900 kHz
7100 kHz
2 m and 70 cm repeaters

The general calling frequencies for AREC stations requiring assistance in emergencies are, 3900 kHz USB or local repeaters and these frequencies are normally monitored by AREC personnel during events such as storms, earthquakes and other significant events that could give rise to emergencies.

AREC Sections' Net

A monthly net is held on 3900 kHz USB at 1930 hours NZST or at 2030 hours NZDT on the third Monday of each month except December. This net uses the AREC Identifier of **ZK6E**, the AREC master station and is conducted as a contact net for those Sections wishing to seek information or report activities of an AREC nature.

Be prepared for an emergency—What to do—Some suggestions

As an Amateur Radio Operator, who may become involved with an emergency of some kind and having access to assistance via radio could provide timely intervention to those in distress. Preparations for such an eventuality would be good planning and the following suggestions are offered.

1. Be familiar with your local repeater services and frequencies, with a knowledge of the service area.

2. In the event of an SAR requirement, contact your nearest Police station, they will activate their system.

3. For Civil Defence requirements, contact either your Regional or District Councils.

4. Be familiar with your AREC representatives or Club officials, keep a list in the house and car.

5. Use the AREC call frequencies or break-in on any net and identify yourself and the emergency at hand.

When making a call for assistance, by radio, ensure that all the vital details concerning the emergency are passed to the station that is contact the emergency services, this will enable a more appropriate response.

Police, Fire, Ambulance check list

Type of incident

Road accident—type and number of vehicles involved.

—Number and extent of injured or trapped persons.

Type of medical emergency—heart attack, electrocution, etc.

What is on fire—car, building, stove, etc.

Kind of accident—car/truck, car/person, motorcyclist etc.

Hazardous chemicals involved—gases, liquids, fuel, etc.

Location of accident

Street or road name and number, rural number, highway number.

Cross street or road reference.

Suburb and city or town.

Any other geographical detail to clarify location.

Other information

Vehicle registration number—burglar, hit and run, etc.

Description of people—clothing, height, race.

Direction of travel.

(If you are making a telephone call to the emergency services, make sure the above information is gained from the person on the radio before making the 111 call.)

Marine distress call

Intercepting a "MAYDAY" call, briefly listen to see if any other station is responding, then endeavour to contact the distressed vessel on the frequency and mode they are using. Do not get them to change frequency. Ask for details of the distress and write down the details given.

Essential information

Where

Position, latitude and longitude, GPS information, any bearing and distance from geographical feature or place.

What

What is the nature of the distress?

What help is required?

What battery life or restrictions are on radio use?

What lifesaving equipment is on the vessel?

Has an EPIRB been activated?

What is the weather at the distress position?

Who

Description of distressed vessel, name, registration and size.

How many people in distress and their ages.

Colour of vessel and distinguishing marks.

Also record the time and frequency of the distress call. If practical get another person to telephone in the information and stay on the frequency to gather other essential information. Tell the operator what assistance you are giving to help them.

Desirable information

Voyage details

Departed time, date, destination. Last known exact fix, if position unsure.

Medical details

Any specific medical needs or conditions?

Extent of injuries.

Safety equipment

Food and water available.

Other types of radio equipment, VHF, HF.

Flares and types available.

The station called Mayday, in fact, might not hear you calling because of propagation or other factors, but continue to listen, they could transmit their position details blindly. Regardless, report the distress call to the coast guard or Taupo Marine Radio stating the time and frequency, when first heard and any other details of the signal, background noises or how genuine it sounds.

Earthquake

In the event of a moderate or greater earthquake felt in your location, your assistance, through AREC, could be valuable to Civil Defence. Switch to your local VHF repeater and monitor for activity about the event. An AREC station may be requesting reports from stations on what has occurred in their locality. AREC will be gathering this information to put together a "Felt Report" (refer to Earthquake Reporting). This information is then relayed to Civil Defence to help them access the extent of damage that may have resulted.

Apart from estimating the intensity of the earthquake, any information about the state of the utility services and any other significant details known about your surroundings will be useful.

EARTHQUAKE REPORTING
THE MODIFIED MERCALLI SCALE OF INTENSITY OF EARTHQUAKES

Introduction

The severity of an earthquake can be expressed in two terms, namely intensity and magnitude. These two terms are different and are often confused.

Intensity is based on the effects of ground shaking on people, buildings, contents and natural surroundings and varies from place to place within the disturbed region. This observed effect depends on the location of the observer with respect to the earthquake epicentre (location within the earth's crust where the movement occurred).

Magnitude is related to the amount of seismic energy released at the hypocentre (point on the earth's surface directly above the earth movement). This measurement is made by and recorded on instruments (Seismograph) that have a common calibration, thus magnitude is determined instrumentally and uses the Richter Scale to indicate the magnitude. The Richter Scale bears little resemblance to how people perceive the intensity of an earthquake, thus the "Modified Mercalli Scale of Intensity" is measurable by people.

This scale is based on certain key responses being felt or observed by people who can then grade the intensity using this scale, and communicate this to others. When reporting an earthquake you should use this scale to convey the effects that had been felt in your location. When a number of reports are collected from an area and assembled in one place, a summary of this information then becomes known as a Felt Report (indicating the extent of the area it was felt over and what intensities were experienced).

Modified Mercalli Scale of Intensity

MM1

Not felt by humans, except in especially favourable circumstances, but birds and animals may be disturbed. Reported mainly from upper floors of buildings more than 10 storeys high. Tree branches, chandeliers, doors and other suspended systems of long natural period may be seen to move slowly. Water in ponds, lakes, reservoirs etc may be set into seiche oscillation.

MM2

Felt by people at rest indoors, especially by those on upper floors or otherwise favourably placed. The long period effects listed in MM1 may be more noticeable.

MM3

Felt indoors, but not immediately identified as an earthquake by most Vibrations may be likened to the passing of a truck. It may be possible to estimate the duration, but not the direction. Hanging objects may swing slightly.

MM4

Generally noticed indoors, but rarely outdoors. Light sleepers may be awakened. Vibrations may be likened to passing heavy traffic, or to the jolt of a heavy object falling or striking the building. Walls and frame of building are heard to creak. Doors and windows rattle, liquids in open vessels may be slightly disturbed. Standing motor cars may rock, and the shock can be felt by their occupants.

MM5

Generally felt outside, and by most indoors. Most sleepers awakened. A few people frightened. Direction and motion can be estimated. Small unstable objects may be displaced or upset. Some glasses and crockery may be broken. Some large windows cracked/damaged. Hanging pictures move. Doors and shutters may swing. Pendulum clocks are affected.

MM6

Felt by all. People and animals alarmed. Many run outside. Difficulty experienced in walking steadily. Slight damage to masonry "D". Some plaster cracks or falls. Isolated cases of chimney damage. Windows, glassware and crockery broken. Object fall from shelves, pictures from walls. Heavy furniture moved. Unstable furniture overturned. Small church and school bells ring. Trees and bushes shake, or are heard to rustle. Loose material may be dislodged from existing slips, talus slopes or shingle slides.

MM7

General alarm of people and animals. Difficulty experienced in standing. Noticed by drivers of motorcars. Trees and bushes strongly shaken. Large bells right. Masonry "D" cracked and damaged. A few instances of damage to masonry "C". Loose brick and tiles dislodged. Unbraced parapets and architectural ornaments may fall. Stone walls cracked, weak chimneys broken, usually at the roof line. Domestic water tanks burst. Waves seen on ponds and lakes. Water made turbid by stirred up mud. Small slips, caving in of sand and gravel banks.

MM8

Alarm may approach panic. Steering of motorcars affected. Masonry "C" damaged with partial collapse. Masonry "B" damaged in some cases. Chimneys, factory stacks, monuments, towers and elevated tanks twisted or collapsed. Panel walls thrown out of frame structure. Some brick veneers damaged. Decayed wooden piles broken. Frame houses not secured to foundations may move. Cracks appear on steep slopes and in wet ground. Landslips in roadside cuttings and unsupported excavations. Some tree branches may be broken off. Changes in the flow or temperature of springs and wells may occur. Small earthquake fountains (fissures).

MM9

General panic. Masonry "D" destroyed, masonry "C" heavily damaged, sometimes collapsing completely, masonry "B" seriously damaged. Frame structures raked and distorted. Damage to foundations generally. Frame houses not secured to foundations shifted off. Brick veneers fall and expose frames. Cracking of ground conspicuous. Minor damage to paths and roadways. Sand and mud ejected in elevated areas, with the formation of fissures and sand craters. Underground pipes broken. Serious damage to reservoirs.

MM10

Widespread panic. Most masonry structures destroyed, together with their foundations. Some well-built buildings and bridges damaged. Dams, dykes and embankments seriously damaged. Railway lines slightly bent. Concrete and asphalt roads and pavements badly cracked or thrown into waves. Large landslides on river banks and steep coats. Sand and mud on beaches and flat land moved horizontally. Large and spectacular sand and mud fissures. Water from rivers, lakes and canals thrown up on banks.

MM11

Wooden frame structures destroyed. Great damage to railway lines and underground pipes.

MM12

Damage virtually total. Practically all works of construction destroyed or greatly damaged. Large rock masses displaced. Line of sight and level distorted. Visual wave motion of the ground surface reported. Objects thrown upward into the air.

Masonry categories

"A"

Structures designed to resist lateral forces of about 0.1g that satisfy the New Zealand building code 1955. Typically, well reinforced ferro-concrete. All mortar is in good condition and the design and workmanship is good. Few buildings erected prior to 1955 can be regarded as category A.

"B"

Reinforced buildings of good workmanship and with sound mortar, but not designed in detail to resist lateral forces.

"C"

Buildings of ordinary workmanship, with mortar of average quality. No extreme weakness, but neither designed nor reinforced to resist later forces.

"D"

Buildings of low standards of workmanship, poor mortar or constructed of weak materials like mud brick and rammed earth. Weak horizontally.

The R-S-T System

Readability

1—Unreadable.
2—Barely readable, some words distinguishable.
3—Readable with considerable difficulty.
4—Readable with practically no difficulty.
5—Perfectly readable.

Signal Strength

1—Faint signals barely perceptible.
2—Very weak signals.
3—Weak signals.
4—Fair signals.
5—Fairly good signals.
6—Good signals.
7—Moderately strong signals.
8—Strong signals
9—Extremely strong signals.

Tone

1—Harsh, broad hiss, no perceptible tone.
2—Harsh, broad hiss, just perceptible tone.
3—Harsh, broad non-sinusoidal tone.
4—Harsh, broad tone, badly hum-modulated.
5—Poor sinewave, badly hum-modulated.
6—Good sinewave, pronounced hum modulation.
7—Good sinewave, definite hum modulation.
8—Excellent sinewave, just perceptible hum modulation.
9—Perfect sinewave.

The "tone" scale is used for reporting the amount of hum on a CW signal. If the signal has chirp, the letter "C" can be appended. If the signal has key-clicks, the letter "K" can be appended. Most of the signals you hear will be T9.

compiled by
MURRAY GREENMAN
ZL1BPU

Digital Modes are a facet of the hobby of great interest to some Amateurs, but remain an unexplored and misunderstood world to others, who perhaps expect it to be difficult and expensive to get involved, requiring extensive computer skills, and lacking in interesting live contacts with other Amateurs. This is however not true at all. Use of Digital Modes, particularly HF Digital Modes, for real-time contacts, has grown tremendously. Some of the modes developed in the last 10 years or so are now extremely popular for working DX, while other modes have advantages when working locals when conditions are poor—no need to suffer those static crashes.

VHF and UHF operation is still mostly limited to packet operation, and although bulletin board and message forwarding by radio is now largely replaced with high-speed internet, microwave networking, APRS and similar "tools" have a following. There is also some interest in VHF SSTV, PSK-31, Hellschreiber, specialized Meteor Scatter, Aurora and moon-bounce modes, which offer considerable promise. Influenced by the internet, VHF packet activity has dropped markedly in recent years, but the HF digital "chat" modes are more popular than ever.

Digital modes make use of some type of keying or modulation to send data as "0"s and "1"s. For example, RTTY uses Frequency Shift Keying (FSK), sending "0"s on one frequency, and "1"s on another, with the elements arranged as five sequential data bits per character along with others for synchronizing the receiver. Morse and Hellschreiber send dots as carrier, and gaps between dots as no carrier. PSK31 sends "0"s and "1"s by switching the carrier phase, which you can imagine is the same as interchanging the leads to the antenna at the data rate. Many of the recent modes use multiple frequencies to send more data on each element, using techniques known as Multi-Frequency Shift Keying (MFSK) and Orthoginal Frequency Division Multiplex (OFDM).

Most digital modes use a coding system, which means that the letters and numbers (or even voice sounds or picture colours) are represented by numbers, which are transmitted as "0"s and "1"s. This improves the efficiency, but reduces the resistance to errors. RTTY (which uses the CCITT International Alphabet ITA2), PSK-31 (which uses the G3PLX Varicode), Pactor (which uses ASCII, also known as ITA5) and digital voice (for example DRM, which uses a compression algorithm) are examples of coded modes. FAX, SSTV, and Hellschreiber are examples of uncoded modes.

Many of the newer modes use an error correction system to ensure that the data arrives intact despite problems in the propagation path. This error correction takes one of two forms: Automatic ReQuest repeat (ARQ) or Forward Error Correction (FEC). These techniqies have different merits, so some modes use a combination of FEC and ARQ.

ARQ requires a two-directional link, where each "packet" or block of data received is checked for errors and a request for repeat transmitted back if necessary. These modes are characterised by alternate transmissions from each end of the link; they are not suited to broadcast or net operation, and can be difficult to monitor, because you have no opportunity to receive corrections, and may get multiple transmissions when one of the linked stations has data to repeat. Pactor, WINMAIL, Digital SSTV and VHF Packet use ARQ techniques. Provided conditions are good enough for the link to operate, the data transmitted via ARQ will always be perfectly received—eventually. When conditions are poor, throughput drops off dramatically.

There are several types of FEC, using a simple systematic repetition, complex mathematical algorithms or massive redundancy. FEC has the advantage that the information required to reconstruct the data accurately is transmitted along with the data, so is available to all receivers, while the data rate is constant, and no repeats are required. This is better for net operation. Some FEC types are extremely robust, but no FEC system can alone provide guaranteed perfect copy. Another disadvantage of FEC is that there is some coding delay at the transmitter, and decoding delay at the receiver; as a result, there can be unacceptable delays before print appears at the receiver.

Uncoded modes do not need or use error correction, as they are generally robust by nature; in other words an error is seen as a blemish, rather than a completely different image, character or sound. These modes rely on powerful human pattern recognition ability for reception. Uncoded modes have an elegant simplicity and are generally characterized by the ability to send "overs" as short as just one character. The classic examples are Morse and Hellschreiber.

Digital mode software

Most of the Digital Modes discussed below can be operated with nothing more than a PC with a sound card, with very high performance. The sound card is used to send and receive audio tones which are used with an SSB transceiver. Reference[1] is arguably the best available guide to PC Digital Modes. A Guide to Sound Card Digital Modes with links to the software is also available on the Call Book CD, along with a presentation on HF Digital Modes.[2] The best way to locate the software mentioned in this review is via an Internet search engine, as web sites change frequently.

Other modes, such as Pactor and VHF packet, typically require an external module: either a modem or a modem and controller combination. There are now programs which emulate the modem and controller in software using the sound card.

Baud, bps and wpm

The symbol rate (baud) of a digital transmission is the rate in Hz at which the most basic data symbols are switched on the transmitted signal. For example, Amateur RTTY operates at 45.45 baud. The bit rate, in Bits Per Second (bps), is the actual data rate entering or leaving the modem (or sound card emulating a modem). For various reasons (compression, use of multiple carriers etc.) the bit rate may well exceed the baud rate. For example, MT63 has 64 carriers, and achieves 640 bps at only 10 baud.

The text transmission rate or typing speed in Words Per Minute (wpm) depends on how many bits there are per character (there are on average six characters in each English word, including a word space). As examples, 45.45 baud RTTY is 45.45 bps, and since there are 7.5 bits per character, RTTY operates at 6 characters/sec or 60 wpm. PSK-31 operates at 31.25 baud and achieves about 50 wpm. DominoEX11, an MFSK mode, operates at only 10.7666 baud using 18 tones, and yet achieves about 62 wpm. Feld-Hell operates at 122.5 baud, uses up to 49 bits per character, and is capable of about 25 wpm.

The use of FEC also influences the relationship between raw bit rate and typing speed, always slowing the typing speed compared with operating without FEC. This difference is called the FEC rate. To use the previous example, MT63 operates at 640 bps, but achieves only 100 wpm due to heavy FEC with a rate of 0.1.

Techniques which vary the size of each character (for example variable sized codes, "varicodes", or proportional fonts) can speed up the text speed for a given baud rate, and the actual speed then depends on context, just as it does in speech.

Bandwidth and speed efficiency

It is important to realize that some modes use much more bandwidth than others, often (but not always) in order to provide some other advantage. For example, compare PSK31 (bandwidth 50 Hz, speed 50 wpm) with MT63-500 (bandwidth 500 Hz, speed 50 wpm). MT63 uses much more bandwidth, and is less sensitive, but because it transmits much redundant information using FEC, is much more difficult to jam.

Some modes are poorly designed, having inappropriate modems, or use excessive bandwidth with no compensating advantages. Modes to avoid in this respect include HF packet, Olivia and MF Teletype. Other modes use too little bandwidth, or an unfortunate choice of keying rate, and so suffer from various ionospheric distortion problems. Some modes have very heavy FEC and other coding which considerably reduces the typing speed. For example Olivia operates at only 23 wpm, despite wide bandwidth, and has excessive delay. Most of the modes described below are well designed to have appropriate bandwidth and good efficiency. Advantages and any deficiencies are highlighted.

RTTY

The first digital mode to see widespread use in Amateur circles (after Morse, that is), RTTY (Radio TeleTYpe) is a conversational or "chat" mode, and uses the ITA2 code to send a limited text alphabet, using frequency shift keying. Two tones are used, 170 Hz apart for Amateur applications. The transmission is about 450 Hz wide. Most Amateur operation is at 45.45 baud, while commercial services tend to be 50 or 75 baud. RTTY was designed for land-line use with mechanical machines, was never intended for DX radio operation, and suffers badly from multi-path effects. One lightning crash can cause a whole line of text to print in error.

RTTY still has a modest following, especially among mechanical machine enthusiasts, and it is still used for some contests. Perhaps the nicest sound card RTTY programs are TrueTTY by

Sergei UA9OSV and MMTTY by Mako JE3HHT. Both have excellent tuning indicators and all the features one needs for simple yet slick conversations and even contests. MMTTY is more complex, but more versatile. MIXW by Nick UT2UZ and Denis UU9JDR is an excellent multi-mode alternative. For LINUX use RTTY by Jes's EB1DIX or LinPSK by Volker DL1KSV, and for MacOS, Cocoamodem by Kok Chen W7AY.

AMTOR

AMTOR is rather like RTTY, but includes extra data to enable some errors to be detected. It operates at 100 baud, but the actual text throughput is the same as 50 baud RTTY. It was developed many years ago from the commercial SITOR system by Peter Martinez G3PLX. Most AMTOR operation was ARQ, characterised by very short transmissions (about one second), but is now little used (SITOR is still used by the marine service). AMTOR FEC is still useful for local bulletin broadcast (although MT63 is preferred) and was used to call CQ for AMTOR contacts. (NAVTEX is identical to AMTOR FEC and is used for marine weather and navigation warnings).

AMTOR is now very little used, and is not offered in PC sound card software, so you will need a TNC to operate AMTOR. AMTOR works well on 160m, but suffers badly on higher bands unless used for groundwave communications.

PSK-31

PSK-31 was developed by Peter Martinez G3PLX as an RTTY replacement, and was the first Amateur "designer" mode. It is a slick keyboard "chat" mode, but is much more sensitive and robust than RTTY, and uses less bandwidth than almost any other mode. PSK-31 uses differential phase shift keying (BPSK or QPSK). Just one tone is used. In BPSK mode the data is transmitted without error correction, while in QPSK mode each symbol represents two bits, allowing an FEC error correction technique to operate. The bandwidth is a mere 60 Hz. On HF, the error correction is disappointing, and PSK-31 is generally operated on HF without error correction.

PSK-31 is very popular, is still the most popular digital mode, and has proved to be excellent for HF and VHF DX, despite reception errors. It is not well suited to trans-polar or trans-equatorial paths (such as long path to Europe) or short F-layer paths, as it is susceptible to ionospheric flutter due to the narrow bandwidth. It copes well with adjacent signals, fading and multi-path reception, and it is not unusual to work stations you can barely hear, even with several others in the receiver passband. Tuning is easy because even weak signals can be seen on the software tuning display.

Because of the sensitivity, low power is all that is needed. There is a wide range of PC software for PSK-31. A good program to get started with is DIGIPAN, conceived by Skip K6TY for use with QRP "PSK Warblers", dedicated crystal controlled PSK transceivers. MIXW and MultiPSK by Patrick F6CTE are also very popular, and there are several options such as gMFSK and LinPSK for LINUX, plus Cocoamodem for MacOS.

MFSK16

Developed by Murray ZL1BPU specifically for Long Path DX, MFSK16 has a most unusual and recognisable musical sound. It uses 16 tones, transmitted one at a time at 15.625 baud. It is significantly better for polar and long path DX than PSK31, as it is immune to polar Doppler effects, and has high multi-path resistance. It is also a very sensitive mode, and has also been found very effective for 80 m DX. The only trouble is that the tuning requirements are quite tough—the receiver needs to be within 4 Hz of the right frequency to receive, and drift must be less than 4 Hz per over. Since most modern transceivers easily meet these requirements, MFSK16 is quite popular for DX and regular rag chewing.

MFSK utilizes special DSP techniques to enhance the performance and avoid ionospheric difficulties. With multiple tones, it is possible to achieve sensitivity not possible with RTTY, and also transmit more data per tone (four bits) than a two-tone or PSK system (one bit). This allows the baud rate to be reduced to counter multi-path effects, which are baud rate dependent. MFSK16 has strong Forward Error Correction, and achieves a typing speed of 40 wpm in a bandwidth of 315 Hz. Many programs are available for MFSK16. The original STREAM by Nino IZ8BLY is highly recommended, as is MIXW, by Nick UT2UZ and Denis UU9JDR, and MultiPSK by Patrick F6CTE. gMFSK by Tomi OH2BNS provides great performance in a LINUX environment. These last three programs also offer embedded picture and file transmission in MFSK16 mode.

DominoEX

This new mode was developed to provide high performance under Near Vertical Incidence Signals (NVIS) conditions, such as those on 80 m at night. This type of propagation is characterized by high angle F-layer reflection from the ionosphere, with deep fading and severe propagation delays. Most digital modes do not work at all well under these conditions. The mode was also intended to be as good as MFSK16 under DX operating conditions, and should be used in preference when a suitable range of software is available.

New Zealand is an ideal country for digital mode development, and has seen many innovations in the past. DominoEX is (like MFSK16, Sequential MT-Hell and PSK-Hell) a New Zealand invention, and was designed and developed here by Murray ZL1BPU and Con ZL2AFP. DominoEX uses a series of important new developments to improve the performance of MFSK. A special tone management algorithm ensures that the signal spreading caused by multi-path cannot affect reception; differential frequency coding is used, which eliminates frequency drift and offset problems and "spreads" interference at the receiver to minimize its effect; and a special "nibble varicode" provides highly efficient character coding.

There are several other innovations in this new mode, which is very simple to use. It has a synchronous tuning display which allows the signal to be seen clearly and tuned in even when very weak; it has a full extended ASCII character set which allows transmission of files and accented characters; and an extra "secondary" character set which sends pre-defined data when the transmission is otherwise idle. This data is displayed in a separate receive window. This facility has many uses, the most obvious being to provide full-time automatic ID of each transmission.

DominoEX does not require high power, and works well on 80m even when there is a lot of static, or evening multi-path reception. It is an ideal mode for low power portable or emergency use. DominoEX is very robust without requiring FEC, although an FEC option is offered for when near-perfect reception is important. Six speeds are provided, so the speed can be changed to suit conditions. The default 11 baud mode suits evening and daytime conditions, and operates at 62 wpm, faster than most people can type. Early evening and low power suit using the 8 baud mode, at 50 wpm. Software for DominoEX is available in DominoEX by ZL2AFP[3] and MultiPSK by Patrick F6CTE (which includes the FEC option). Versions for LINUX, MacOS and MIXW are expected in the near future.

MT63

MT63 is an amazing mode that would not have been possible without Digital Signal Processing. Developed by Pawel SP9VRC purely as an academic challenge, in this mode 64 PSK carriers are transmitted at once, each one carrying a different part of the transmitted signal. The data (which includes strong FEC) is spread across the width of the signal, and also spread in time, so MT63 is resistant to both time and frequency related interference. MT63 is very tolerant of poor operating conditions and interference. Unfortunately the signal is rather wide for a digital mode (typically 1 kHz), and very aggressive (causes interference but is not much affected by interference), so needs to be used with care. MT63 is an excellent mode for transmitting bulletins or leaving messages on unattended computers. Users often think that MT63 is very sensitive—this is not in fact the case—it just seems so, because the signal sounds like noise and looks like noise on the tuning display, and because it has such good error correction.

The MT63 software by Nino IZ8BLY is simple to use, easy to tune, locks on to the signal effortlessly, and is extremely robust. It is very sensitive, and excellent for DX under poor conditions. The MIXW version is even better, with higher sensitivity and better tuning tolerance. There is also a very good version of MT63 for LINUX in gMFSK, plus the original SP9VRC MT63 terminal.

Olivia

Developed recently by Pawel SP9VRC, this mode is a marriage of MFSK transmission with the highly redundant FEC used with MT63. Unfortunately the typing speed is very slow, there is a long delay between transmission and reception, and the bandwidth rather wide. The performance in terms of sensitivity and interference rejection is similar to MT63, and the mode enjoys good drift and tuning tolerance.

The most widely used version uses 32 tones in 1 kHz bandwidth, but there is a wide number of very confusing and non-compatable variations, difficult to tell apart, and differing in bandwidth, baud rate and number of tones. To add further to the confusion, there are similar modes with other names, such as "Contestia" and "RTTYM". There are add-ons for these modes in MIXW, and Olivia is offered in MultiPSK. The original SP9VRC OLIVIA was written for LINUX.

Hellschreiber

This elegant mode almost became a lost art, but began an enthusiastic revival in the late 1990s thanks to the PC and sound card. Text and simple graphic symbols are transmitted uncoded, rather like sending the dots to a dot matrix printer. Because the signal has very high peak power compared with the

average power, and is interpreted by eye rather than by electronics, the mode is very immune to impulse noise and requires little power. It is also immune to most ionospheric effects if tuned with care. Since tuning is broad, it is simple to use, ideal for HF and for satellite working.

Hellschreiber has a special appeal that occurs with no other mode except Morse; there is an immense "feel" that the operator has for the propagation of the arriving signal, and the uniquely recognisable "fist" (in this case "font") of the transmission, as well as the signal sound which changes with propagation. The user can choose any one of many fonts to transmit (even "Windows" fonts), although the original 1930s font is still the best. The data rate, typically 122.5 baud, provides a good 25–30 wpm typing speed, depending on the font used. Big black fonts are best for DX, but tend to be slower.

The most commonly used mode is Feld-Hell, an on-off keyed CW radio mode which dates from the 1940s and predates RTTY. Invented by Rudolf Hell, Feld-Hell uses a single 980 Hz keyed tone. It is an ideal mode for 20 m, and performs well on other bands, even 80 m, satellites and moon-bounce.

The most sensitive Hell modes are PSK-Hell and FM-Hell, invented by Murray ZL1BPU and Nino IZ8BLY. These modes transmit the dots as phase reversals. These are excellent DX modes, very sensitive and (FM-Hell especially) not affected by ionospheric flutter in the way PSK-31 is. FM-Hell uses MSK modulation, and does not require a linear transmitter.

The best Hell software is IZ8BLY Hellschreiber by Nino IZ8BLY. It operates multiple modes, includes a very good tuning display, and is really simple to install and use. MIXW and MultiPSK are also widely used, and there are versions for LINUX (gMFSK) and MacOS (Cocoamodem).

Fax and SSTV

These modes can also be operated with nothing more than a PC with sound card. Fax is very rarely transmitted on Amateur bands, although there is some interest in receiving weather maps on HF (black and white) and weather satellite images (grey scale) on VHF. Both of these modes are straightforward with software like Christian Bock's WXSAT program. The resolution produced by this software is incredible. On satellite pictures it is often possible to identify the South Island lakes, the Waikato River, and puffs of steam from White Island.

SSTV is a great way to share photographs, graphics and simple drawings with friends. The resolution is not very high, but the colour depth is good and the image content is restricted only by imagination and good taste. Much the best program to start with is MMSSTV by Mako JE3HHT. It helps if you have a scanner, digital camera or a good collection of digital images to send. SSTV is typically used to add interest to an SSB contact, and is also used on VHF FM, where picture quality is excellent. There are VHF SSTV nets in several parts of the country from time to time.

Digital SSTV and DRM

Digital SSTV is a recent development that can be experienced if your computer has enough power. The sound card modem used is based on that designed for DRM (see below), but restricted to 2.4 kHz bandwidth. Each block of data includes a checksum, and if the picture is received with some blocks incorrect, a semi-automatic process can request repeats of the missing blocks until perfect reception results. Picture quality is superb—identical to the original picture, and images of any size and resolution are accomodated. Transmissions are also identified by a header which includes the call-sign and image details.

The software tends to expect the user to be an expert, so find an experienced user to help you get started. Signals need to be strong and noise-free, with good propagation conditions for transmissions to be successful. HAMPAL by Erik VK4AES and DIGTRX by Roland PY4ZBZ are probably the easiest programs to use. The WINDRM modem used was designed by Cesco HB9TLK, and can also be used for fast file transfer.

Digital Radio Mondiale (DRM) is a new wideband digital mode intended for MF and HF commercial broadcasting. Reception quality can be very good, with low distortion, and often in stereo, although few stations are receivable in New Zealand at present. The modem uses sophisticated compression techniques, combining amplitude and phase modulation, allowing high sampling rates to be accomodated in 10 kHz bandwidth. There are several different formats allowing for transmissions up to CD quality. The mode is quite immune to fading, and does not suffer from selective fading that causes so much distortion on AM short wave broadcasting. A special receiver is required, but it is possible to receive DRM with a PC using the free DREAM DRM software by Volker Fischer, which works with a 12 kHz IF input to the sound card. A conventional receiver have an adaptor added to provide the 12 kHz output. The software also receives AM, SSB and FM, with very good quality.

DRM can be transmitted using the same software, and has been demonstrated on 80 m by ZL1WTT using an adaptation of a digital phasing exciter designed by W1TAG. High power is required for reasonable transmission range, and the transmitter linear amplifier must have very low distortion, and these conflicting factors makes this mode quite a challenge.

PACTOR

A cross between Packet and AMTOR, PACTOR is a commercial and proprietary FSK system which provides strong error detection and ASCII text with an ARQ format. Efficiency is improved by a clever system where repeated damaged blocks of data are averaged until the check-sum is met, so a complete error-free block is not actually required for correct reception. Many of the newer HF multimode controllers offer PACTOR, and there are some applications for PC or other processor and external modem. PC sound card receive-only programs are available, but like AMTOR, no PC sound card software offers full capability. Pactor operates at 100 or 200 baud, and switches between speeds as conditions permit. There are more recent versions (PACTOR2 and PACTOR3), which offer even better performance, but require expensive commercial hardware.

PACTOR is popular for bulletin board use, and it is rare now to have a conventional contact using PACTOR. There are many Bulletin Board Stations (BBS) available on HF, some with connections to the Amateur Packet network, some with internet connection for mail forwarding. PACTOR is also widely used commercially. The WINLINK stations, for example, are fixed mail store-and-forward stations based around the world, with connection to the internet. Each station has a frequency list that it scans every few seconds.

These frequencies are mostly on 40, 30, and 20 m. These stations provide a service to marine and other registered mobile or portable operators, who call on one of the published frequencies. Once connected, the BBS controls operation just like a Packet system.

LF and QRP Modes

Some modes are especially suited to weak signal operation, especially where the data rate can be very low, such as for beacons and for LF operation. Various types of Morse transmission are widely used, at a low speed (QRS) or very low keying speed (QRSS) that is read visually. One of the most popular ways to receive these modes is to use a Spectrogram such as ARGO by Alberto I2PHD, which was designed specifically for Morse modes such as QRSS3 (3-second dots) down to QRSS120 (two minute dots).

Often the Morse is keyed using an FSK technique which allows the dots and dashes to be the same length and eliminates the need for spaces between elements, speeding up the transmission rate. These modes can also work well for HF beacons and QRP operation. Hellschreiber modes are also popular for QRP, in part because the average power is much less than the peak power, an important factor in portable operation.

Operating frequencies

Narrow band modes (RTTY, PSK-31) are to be found at the lower end of the digital allocation on each Amateur band, for example on 20 m from 14.070 to 14.099 MHz. Wider modes are found at the upper end of the allocation, for example on 20 m from 14.101 to 14.130 MHz. On 20 m the modes tend to be segregated to some extent, PSK31 at around 14.070 MHz, then Hellschreiber and other less used modes near 14.075 MHz, followed by MFSK16 and other narrow up to 14.080 MHz, where RTTY prevails. Wideband modes such as MT63 and Olivia are found around 14.109–114 MHz, with SSTV and digital SSTV around 14.230 MHz since they are used in conjunction with voice.

A ZL Digital Modes net operates on Friday evenings on 3560 kHz LSB, from around 8:30 pm. All modes are demonstrated and discussed, and newcomers are very welcome to join in and experience the different modes. The net is the perfect place for assistance in setting up, and for asking questions about Digital Mode operation. Some digital modes operators listen on this frequency every evening, and there are Morse and DominoEX nets on other evenings.

The operating frequency for most digital mode operation is usually quoted as the frequency the transmitter emits when idle, which in some modes can be measured with a frequency counter. For RTTY this is the mark frequency. For Morse, PSK-31 and Hellschreiber, it is the carrier frequency. MFSK16, MT-Hell and DominoEX signals are quoted from the lowest tone frequency. However, for complex modes like MT63, Olivia and SSTV, the frequency quoted is usually that indicated on the transceiver display in USB, since the tones transmitted and the sideband used are fixed by convention.

Most digital mode operation follows the USB-LSB convention used for SSB (LSB below 9MHz, USB above, with now a noticeable trend towards USB on all bands). The exception is RTTY, which for

no good reason is always operated in LSB. Some modes (Morse, PSK31, Hellschreiber, AMTOR) can be copied equally well on either sideband. Commercial operation is almost always USB, and the quoted frequency is the transmission centre frequency.

Packet Radio

Packet radio utilizes FSK and a protocol known as AX-25, which defines an automatic system to transmit blocks of information (called packets) which include the data, message type, information as to who the data is addressed to and sent from, and a robust error detection system called a Cyclic Redundancy Check (CRC).

Packet radio is organised so that many stations can operate on the same frequency with limited interference. This technique is called Carrier Sense Multiple Access/ Collision Avoidance (CSMA/CA), which means that stations listen for other signals before transmitting to avoid collision, but cannot guarantee not to cause interference to stations that cannot be heard. This situation frequently happens when stations on opposite sides of town share a BBS station.

Most, but not all, packets require acknowledgement (an ACK), and the sender will repeat the packet until a correct acknowledgement is received. This technique ensures that the data is received correctly and compensates for collisions and errors, but as the channel activity increases, the useful data rate slows down significantly, as more and more time is spent correcting and sending requests for repeats.

There is a special family of unacknowledged messages, called an unconnected Information (UI) packet, that is widely used for beacon messages and for the Automatic Position Reporting System (APRS) developed by Bob Bruniga WB4APR.(4) APRS networks now operate in most centres, either using a local data repeater or the APRS calling frequency, 144.575 MHz. APRS is popular for tracking mobile stations equipped with GPS position location and equipment to automatically transmit the position, speed and heading of the vehicle. It is also remarkably effective for sending simple chat-type messages.

The most common Packet format is 1200 baud AFSK using an FM transmitter. A device called a Terminal Node Controller (TNC) is generally used with a computer. The TNC contains both the packet controller and modem. Faster systems, to 9600 baud and beyond, are find increasing use, especially for satellite forwarding and dedicated links. Most packet operation in New Zealand is on VHF or UHF, using narrow band FM. Appropriate frequencies are listed elsewhere in the Call Book.

Packet BBS operation

There are many packet BBS stations in New Zealand, most with 2m access, and many with 70 cm access. If you call them and connect, sending an "H" command will give you a list of commands to which the BBS responds. The list of commands and facilities on most BBS setups is extensive, but simpler functions like listing and reading messages, reading and sending mail, are simple and easily learned. Packet messages, either for general distribution (bulletins) or personal delivery (e-mails) are forwarded automatically between the BBS stations. Much of the forwarding within New Zealand takes place overnight using the National System on 70 cm.

Data Repeaters

To enhance the range and utility of packet radio, it is relatively easy to arrange for packet systems to repeat or forward data. In fact any packet station can act as a data repeater (called a "digipeater"). Unfortunately there is an extra delay in every digipeater that the data passes through, and unless the input and output is on a different frequency (called a "gateway"), the extra traffic on the radio channel further slowis down the

throughput. A hill-top data repeater, similar to a VHF voice repeater, provides much better performance. Data repeaters are listed in the Call Book "Repeaters and Beacons" section.

References

(1) Digital Modes for All Occasions, Murray Greenman ZL1BPU, published by the Radio Society of Great Britain, ISBN 1872309 82 8.

(2) See Files folder on *Call Book* CD.

(3) Install from Files folder on Call Book CD.

(4) See <www.aprs.net/>.

DX PacketCluster

by
MURRAY WOODFIELD ZL1CN
CHRIS HANNAGAN ZL2DX

The DX PacketCluster is a Packet BBS provided especially for DX operators. While it has the normal bulletins and mail facilities normally associated with a packet BBS, it also has many other features of interest to DX operators. For example, if anyone logged on to the DX PacketCluster hears some interesting DX, this "DX spot" can be put up on the Cluster for the benefi t of any others who may be logged on. The others will see the DX spot in real time, and anyone interested can tune up and work the DX station. This is the prime purpose of the DX PacketCluster. There are also other features such as WWV sunspot information which can be put up, a list of current DXCC countries with prefixes, headings and distances from your QTH, and sunrise and sunset information for each country.

Various DX bulletins are put up on the Clusters from time to time.

Note that the ZL2AQY-10 PacketCluster is connected permanently to a network of Clusters operating in Australia, North America and Europe as is ZL2ARN-10. This means that information posted on the network is accessible to amateurs in New Zealand. ZL2AL-10 also receives this information all PacketClusters in New Zealand are linked.

The following is the information for those interested in connecting to a DX PacketCluster:

ZL2AQY-10 Auckland Access through Klondyke node, ZL1AB-1 on 144.600 and ZL1PK-1 in Hamilton.

South Island access is also available through ZL3VML-6 in Christchurch, ZL1AMC-1 in Invercargill, ZL2AL-1 in Hawkes Bay or any node with ZL2AQY-10 in its nodes listing. Access also through the internet:

Telnet: zl2aqy.ath.cx:9000. ZL2ARN-10 Waikanae Access on Climie repeater on 438.600 and 145.425

Access also through the internet: Telnet zl2arn.ath.cx:7300 ZL2AL-10 Hastings Access on 144.65. Efforts will also be made to extend the network further, depending on the availability of resources.

If you are keen on DX on any band, including VHF and UHF, then the DX PacketCluster is for you.

Even if you have no experience at packet, you will benefit from connecting to a Cluster, and staying connected while you are tuning the band—you will even be able to put up spots and information yourself for the benefit of others.

Further information is available from the sysops, Eddie ZL2AQY and Gordon ZL2ARN. Eddie Olsen ZL2AQY and Murray Woodfield ZL1CN.

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Please Note:

1. These documents can be used as a source of hand-out notes for Instructors at Radio Classes. Copy-and-paste can be used to copy material into a wordprocessor then photocopied for class use—or whole pages can be printed off.

2. The **Guide** is NOT a replacement for the NZART *Basic Radio Training Manual.* They support and complement each other.

AMATEUR RADIO RECORDS

by JOHN WYSOCKI ZL2TWS

New Zealand VHF/UHF/SHF records 2004

Band	Frequency	Type	Stations	Date	Mode	Distance (km)	Notes
6 m	50 MHz	Overseas	ZL3VTV/1-EH7KW	03/04/2001	SSB	19,921*	(1) New Zealand 70 cm band has now been reduced from 420–450 MHz to 430–440 MHz. The Video (TV) record of 31/01/1982 on 425 MHz stays as a 70 cm record. (2) New Zealand 13 cm band has now been reduced from 2300–2450 MHz to 2396–2450 MHz. The records of 31/01/1982 and 18/10/1987 stay as a 13 cm record. This band is now known as 12 cm band. (3) New Zealand 50 cm band has now been reduced and changed from 610–620 MHz to 614–622 MHz. The record of 23/04/1988 stays as a 50 cm record. (4) /p means portable operation. (5) /# means operating in another state or district. (6) * 50 MHz contact ZL3VTV/1-EH7KW, F2. (7) 32 cm 925 MHz ZL2TRV-ZL1TBG 30/11/2002 620 km with high power permit.
6 m	50 MHz	Overseas	ZL3JT-N6XQ	04/03/2001	PSK31	14,268	
6 m	50 MHz	E-M-E	ZL2BGJ-WA4NJP	08/09/1988	CW	13,256	
6 m	50 MHz	E-M-E	ZL3TY-IW5DHN	15/11/2003	JT44	18,444	
2 m	144 MHz	Internal	ZL2ARW/p-ZL1BJB/p	03/02/1982	SSB	1,069	
2 m	144 MHz	Overseas	ZL1HH-VK5ZEE	15/01/1986	SSB	3,420	
2 m	144 MHz	Overseas	ZL3TY/VK2EI	14/05/2002	FSK441	2,028	
2 m	144 MHz	E-M-E	ZL2BGJ-G3POI	26/05/1985	CW	18,821	
70 cm	432 MHz	Internal	ZL2ARW/p-ZL1BJB/p	03/02/1982	SSB	1,069	
70 cm	432 MHz	Overseas	ZL1AOX-VK3EK	03/01/2004	SSB	2,413	
70 cm	432 MHz	E-M-E	ZL3AAD-G3SEK	112/03/1989	CW	18,970	
70 cm	425 MHz	Internal	ZL2TWS/p-ZL2ASF/p	31/01/1982	Video	373	
50 cm	610 MHz	Internal	ZL2UGR/p-ZL2AJI/p	23/04/1988	SSB/FM	302	
32 cm	925 MHz	Internal	ZL3TRV/p-ZL1TBG/p	30/11/2002	NB/FM	620	
23 cm	1281 MHz	Internal	ZL1TGB/p-ZL1WTT	05/07/1998	FM/ATV	76	
23 cm	1296 MHz	Internal	ZL2ARW/p-ZL1THG/p	30/01/1982	SSB	687	
23 cm	1296 MHz	Overseas	ZL1AVZ-VK2FZ/4	30/11/1995	SSB	2,317	
23 cm	1296 MHz	E-M-E	ZL3AAD-PA0SSB	13/06/1983	CW	18,657	
13 cm	2304 MHz	Internal	ZL2ARW/p-ZL1THG/p	31/01/1982	NBFM	687	
13 cm	2304 MHz	E-M-E	ZL2AQE-W3IWI/8	18/10/1987	CW	13,931	
9 cm	3456 MHz	Internal	ZL2AQE/p-ZL2ARW/p	06/03/1983	NBFM	547	
5 cm	5760 MHz	Internal	ZL1TBG/p-ZL1TPH/p	18/03/2001	CW	317	
3 cm	10368 MHz	Internal	ZL1THG/p-ZL2BFC/p	25/01/1981	WBFM	390	
3 cm	10368 MHz	E-M-E	ZL1GSG/p-DJ7FJ	12/03/1997	CW	18,340	
1.2 cm	24000 MHz	Internal	ZL2AQE/p-ZL2AZQ/p	20/03/1988	MCW	126	
2.5 mm	122250 MHz	Internal	ZL1TBG/p-ZL1TPH/p	25/08/2002	NBFM	0.032	

Moonbounce (E-M-E) records 2003

Frequency	Stations	Date	Mode	Distance (km)	Notes
50 MHz	OH2BC-XR0Y	19/09/1995	CW	14,000	(1) /p means portable operation. (2) /# means operating in another state or district.
50 MHz	IW5DHN-ZL3TY	15/11/2003	JT44	18,444	
144 MHz	K6MYC/KH6-ZS6ALE	18/07/1984		19,287	
222 MHz	K1WHS-KH6BFZ	17/11/1983		8,154	
432 MHz	ZL3AAD-G3SEK	12/03/1989		18,970	
902 MHz	K5JL-AF1T	27/05/1990		2,384	
1296 MHz	ZL3AAD-PA0SSB	13/06/1983	CW/SSB	18,773	
2304 MHz	NU7Z-ZS6AXT	13/06/1999	CW	16,480	
3456 MHz	WB5LUA-OK1CA	13/06/2002	CW	8,554	
5760 MHz	ZS6AXT-W7CNK	22/11/1999	CW	14,758	
10368 MHz	ZL1GSG/p-DJ7FJ	12/03/1997	CW	18,340	
24000 MHz	AA6IW-RW3BP	21/04/2002	CW	9,512	

For a copy of the rules to follow and how to claim a record contact:
The VHF/UHF/SHF Records Co-ordinator
C/- NZART
PO Box 40-525
Upper Hutt
or vhfrecords@nzart.org.nz

For record updates and rules to follow when claiming a record see:
www.nzart.org.nz/nzart/vhf and http://www.nzart.org.nz/nzart/vhf/rules.html

INTERNET RADIO LINKING PROJECT

guidelines courtesy Kitchener-Waterloo ARC

Operating Modes

Direct Connect

Where a repeater at one location (Node A) connects via the Internet with another repeater (Node B). With this type of link the two nodes or repeaters can be involved in the connection or resultant conversations. While repeaters "A" and "B" are connected, anyone attempting to connect with either node will be told by a recording that—"The node you are calling is currently connected to call-sign". All local traffic on each repeater will be heard on the other repeater as well.

Reflector Connection

A reflector is a computer that is not connected to any radio, it is connected to the internet allowing many repeaters to be inter-connected, redirecting received audio back to all other connected repeaters. At any given time there maybe 2 to 10 repeaters around the world interconnected via a Reflector.

With reflector use a gap of approximately 10 seconds must be left between transmissions, this allows:

- For the delays created by multiple Tone Squelch radios in the links between the repeater and IRLP link.
- users on other nodes a chance to check in.
- other nodes time to send touch-tone commands to drop their node.

Also allow a delay of approximately three second from the time pressing the PTT button at the start of a transmission.

With IRLP your transmission is now being heard on many repeaters around the world. To ensure intentions are understood give your call-sign (phonetically) along with your name and QTH of the repeater you are monitoring for a call. Mobile listeners may only pick out your prefix, your name or QTH.

When calling a station state your intentions by always identifying whom your call is meant for.

Example: Several stations including a DX station complete a QSO and you wish to contact the DX station. Action: VK3xxx this is Mike ZL3TMB in Christchurch New Zealand. By doing this rather than just using your call-sign you leave no question whom you wish to contact.

Making a direct connection

Listen on your local machine for 15–30 seconds before transmitting, ask if the repeater is currently in use. If all is clear, identify your self and give the node name or number you wish to call. Example: "ZL3TMB connecting to the Sydney node"—then enter the ON code for the node (node number then a 0) and release your PTT. Your local repeater will transmit carrier for a few seconds while waiting for the connection to be authenticated. Connections are confirmed with the transmission of the voice ID of the destination node and your node's voice ID on the destination repeater.

If your node is already connected to another node or reflector the greeting "your node is currently connected to ID of the connection" is played. In this case confirm if anyone desires the connection before closing it using the OFF code (node number then a 1 or just dial 73).

Once connected wait at least 15 seconds before transmitting because:

- The repeater may be in use, and your entry may have occurred between transmissions.
- The voice ID of your node is longer than the voice ID of their node, and the connection is not made until the ID is fully played.
- Their node computer may be slower, and hence take longer to process the connection than yours.

Press and hold the microphone PTT for a second and then announce your presence and your intention such as you are calling someone specifically or just looking for a QSO with another ham in that city.

If no response is heard, announce your call and your intent to close the connection then key in the OFF code (node number then a 1 or just 73). This a normal courtesy and a regulatory issue in some countries who may be connected to the reflector.

Some nodes are configured so you cannot connect to them if that repeater is active and the message "The node you are calling is being used locally" will be heard If your repeater is inactive for 4 minutes the connection will automatically close transmitting a voice ID disconnect message on both nodes.

Connecting to a reflector

Listen to your local repeater for local use and then announce your intention to use the Reflector and send the ON command. When you hear the confirmation ID always WAIT at least 15 seconds before transmitting as you are most likely now connected with many repeaters and a QSO could be in progress. If after 15 seconds you hear nothing, identify yourself and indicate you are listening to the Reflector from "City and Country". As your local repeater possibly now has world-wide coverage include your QTH.

Connections to the reflectors time out with no activity however many node owners set this to a long period so it is not unusual for repeaters with minimal traffic to stay connected to the Reflector for extended periods. When a node times out from a Reflector the message "Activity time out ... Reflector xxx, link off" will be played.

If you hear or wish to engage in a prolonged rag-chew on your local repeater out of courtesy to other node listeners drop the reflector.

Error messages

From time-to-time you may receive connection error messages, common ones are:

"The node you are calling is not responding, please try again later", caused by a loss of internet connectivity to one end of the call attempt.

"BEEP Error—The call attempt has timed out, the connection has been lost", occurs when a node is OFF-LINE. or there may be temporary net or node problems.

"The Connection Has Been Lost" , the internet connection has dropped.

If you are new to IRLP you should always consult with your local node sponsor to confirm the local guidelines on reflector connections in your area.

For a copy of the latest node numbers send a Self addressed envelope to:

Mike Barnes ZL3TMB
PO Box 218
Christchurch 8015
E-mail <zl3tmb@nzart.org.nz>.

Direct from the IRLP web site <http://status.irlp.net/>.

New Zealand IRLP Nodes

Node ID	Call-sign	Node City
6013	ZL4FOX	Auckland
6493	ZL3VTV	Auckland
6793	ZL2AS	Hastings
6900	ZL3TMB	Christchurch
6910	ZL2LD	Wellington Region
6920	ZL2WKI	Palmerston North
6950	ZL1BQ	Auckland
6943	ZL2KO	Feilding
6184	ZL4DM	Dunedin
6931	ZL2VH	Upper Hutt

New Zealand Special Codes

73	Ends the current call and closes the node.
77	Checks the node to see if it is connected to another node or not.
66	Tell you the time in UTC.
67	Tell you the local time here in New Zealand.
##	##<node number> tells you the time at the remote node.

International Nodes

Node ID	Call-sign	Location
1000	VE7RHS	Vancouver
1015	VE7RNV	North Vancouver
1020	VE7RNA	Chemainus
1030	VE7VIC	Victoria
1068	VE6JN	Edmonton
1130	VA7LPG	Nanoose Bay
1150	VE7REE	Summerland
1207	VE7BAS	Richmond
1210	VE7DQC	Prince Rupert
1230	VE6ZV	Calgary
1250	VE7FFF	Prince George
1330	VE5CMR	Saskatoon
1622	VE6AO	Calgary
1638	VA6XG	Edmonton
1650	VE4UMR	Winnipeg
1800	VE6MHU	Medicine Hat
2020	VE3ULR	Toronto
2040	VE2CRA	Ottawa
2050	VE1NSG	Halifax
2153	VA3TEL	Westport
2300	VO1KEN	St. John's
2310	VE3PER	Port Elgin
2312	VO1GNP	St. Anthony
2330	VE3KD	Sault Ste. Marie
2340	VE2REA	Quebec City
2350	VO1HHR	Grand Falls-Windsor
2360	VO1AAA	St. John's
2370	VE1II	Truro
2380	VE6RJO	Calgary
2390	VO1MST	Marystown
2400	VE3SUE	London
2410	VE3RBM	Kitchener
2430	VE3WFM	Waterloo
2440	VE3CRC	Chatham-Kent
2446	VA3SHQ	Portable
2450	VE3RAK	Toronto (City and North)
2460	VE3MUS	Huntsville
2470	VE3RPT	Toronto
2480	VE3AAD	Parry Sound
2482	VE3STR	St. Thomas
2484	VE3RWN	Lindsay
2500	VE3WAT	Tillsonburg
2520	VE3LKT	Pembroke
2524	VE3WHO	Sarnia
2530	VE2CKN	Rimouski
2540	VE3NCF	Hamilton
2560	VE2TPE	Baie-Comeau
2570	VE2RJS	Montreal
2600	VE3PGC	Cornwall
2620	VE3PLF	Fonthill / Niagara Region
2633	VE2CSI	Sept-Iles
2640	VA3ITG	Woodbridge
2650	VA3MME	Omemee
2680	VE3RSB	Burlington
2688	VE3LSR	Barrie
2700	VE3ORX	Orangeville
2710	VE3TIV	Kincardine
2736	VO1VCP	St. John's
2750	VE3KBR	Kingston
2820	VE5NIP	Nipawin
2827	VE3WIK	Hamilton
2843	VE3FCG	Stratford
2860	VE3LTR	Little Current
2870	VE3LNZ	Lindsay
2874	VA3TJS	London
2897	KE4TTE	South Orlando
2900	VA3RVU	Brampton
2920	VE3YRC	Newmarket
2947	VE3KJG	Lavant
2950	VA3UUU	Windsor
2952	VE1YAR	Yarmouth
2970	VE3ISX	Hamilton
2972	VE3NUU	Niagara-on-the-Lake
3000	AH6LE	Beavercreek
3018	N5ZUA	Houston
3019	N7ORY	Twin Falls
3030	KB6THO	Pasadena
3033	K5FOY	Mountain Home
3035	N5XXO	Odessa
3039	W7RAT	Portland
3040	WA6JFK	Los Angeles
3043	NOPWZ	Colorado Springs
3045	WB4LDS	Tucson
3053	K6VE	Palm Springs
3057	W6CX	Mt. Diablo
3060	AC7DE	Helena
3062	K7CPR	Olympia
3079	N5GI-2	Dallas/McKinney
3080	KH6FV-2	Pearl Harbor
3086	KC7DMF	Eugene
3101	KC0QJZ	Aberdeen
3112	KH6DQ	Honolulu
3130	KC7BSA	Fruitland
3133	KA6DWN	Pleasanton
3137	N6RDE	Shingle Springs
3150	WA6RQD	Oceanside
3153	K7HKS	Springfield
3160	WA6RQD	Oceanside
3162	KB0JQO	Conrad
3170	WD6AWP	Huntington Beach
3180	W6DRA	Palm Springs
3190	WD8CIK	Hollywood
3194	W7AOR	Las Vegas
3197	KH6FV-4	Kailua-Oahu
3199	N0BRC	Santa Rosa
3200	AH6CP	Honolulu
3202	WA6TWF	Santiago Peak
3203	NL7R	Valdez
3204	N6VYQ	Elk Grove
3211	W7DBA	Huntsville
3215	K7MLA	Salt Lake City
3226	WA6TUL	Santa Clarita
3230	KB7LVC	Boise
3240	KB7RSI	Las Vegas
3245	K0HU	Humboldt
3250	N7BFS	Spokane
3257	WA7DG	Reno
3260	W7AOR	Las Vegas
3280	WX7Y	Castle Dale
3290	W7AOR	Las Vegas
3297	WB6ZVW	Morgan Hill
3300	N7CK	Testing
3303	AA0BW	St. Joseph

Node ID	Call-sign	Location
3307	WR7CW	Gillette
3310	KA7STK	St. George
3315	K7AAE	Woodinville
3320	N7GZT	Columbia
3335	KG6STN	Pasadena
3337	N5ZUA	Columbus
3340	WR6JPL	Pasadena
3344	WA6EIK	Laguna Hills
3350	N0PQV	Denver
3352	W7SP	Provo/Salt Lake City
3372	W6RAM	Idaho Falls
3373	KD6NAR	Murrieta
3377	KD7ITP	Oroville
3379	KC0CAS	Alexandria
3382	N5SKU	Richardson
3383	W9PCI	Central Point
3386	N4RAP	Paris
3388	KF7LA	Ajo
3390	WB2BQW	New Windsor
3396	KI0DO	Osage Beach
3399	N5SIM	San Juan
3405	N3IO-7	Experimental
3407	K7OJU	North Salt Lake / SLC
3410	KD6GDB	Santa Monica
3412	K5SLD	Arlington
3415	WQ8M	Parker
3416	KB5ZJJ	Houma
3417	NB7C	Cascade
3420	N7PIR	Portland
3425	KB8ENV	Cleveland
3428	WB6MFV	Angels Camp
3437	N5KF	Georgetown
3440	AH6GR	Maui
3450	N0SZ	Boulder
3456	W5EXY	Port Aransas
3459	KL3K	Sterling
3460	WA6LA	Palos Verdes I [WALA]
3463	NA3J/0	Jefferson / Evergreen
3470	N6ICW	Sacramento
3480	WA6LA	Palos Verdes II [WALA]
3482	W7NTF	Spanaway
3483	KL3K	Whittier
3485	WB5QGJ	Mountain Home
3488	KE6ZOY	Santa Clara
3493	K9QAM	Bend
3498	K7FAY	Claremont
3499	N5ADL	Corpus Christi
3500	K6JSI	San Diego - WIN System
3506	KL3K	Houston
3510	WB6EGR	Santa Clarita
3514	AC5XV	Little Rock
3518	KC0IKU	La Crescent
3520	WB6EGR	Burbank
3529	KC7LGT	Sequim
3530	K6JXY	San Marcos
3534	KE5BR	Olathe
3539	AK5Z	Harlingen
3540	W6DXX	Palm Springs
3543	KC7RJK	Eugene
3545	WZ6L	Vallejo
3550	VE6RGP	San Diego - EchoIRLP
3560	WB6HII	Eureka
3568	KF7FY	Pocatello
3570	N7HQZ	Ferndale
3574	WA7GTU	Cedar City
3576	WB7REL	Manti
3577	W7BYU	Roosevelt
3580	WU7Q	Sacramento
3582	K7RTM	Chandler
3583	KL0XE	Juneau
3588	KL3K	Anchorage
3590	N0BVE	Minnetonka
3592	KL3K	Nome
3594	KJ7HE	Round Mountain
3595	KV0K	Glenwood Springs
3598	KD6HWC	Las Vegas
3599	KC7NQU	Yacolt
3602	K5FRC	Bonham
3608	W0WOB	Colby
3609	K6GTZ	Lakewood
3610	K6UB	Saratoga
3616	K0GFM	St. Louis
3620	KU6V	Fremont
3623	KE6PCV	Corona
3639	KC5LOS	Beeville
3640	WA6VPL	Lompoc [WALA]
3641	W7AOR	Las Vegas Gateway
3649	K7GNB	Lake Oswego
3650	KE6PCV	Los Angeles

Node ID	Call-sign	Location
3655	W6FYI	San Jose
3657	KC5NLO	Alamo
3659	KE5BXF	Edinburg
3660	KD7EFG	Murray
3666	KL1IO	Valdez
3667	WB6BDD	Pleasanton
3668	KH6FV-5	North Shore, Oahu
3670	N6JVH-2	Chatsworth
3671	K6SA	Saratoga
3672	KH6FV-3	Guam
3673	K6TZ	Santa Barbara
3675	K9VKC	Sioux Falls
3686	KA6AMR	Duarte
3690	N6SEX	Sacramento
3692	AA7GK	Bozeman
3695	N5GI	McKinney
3707	K5DG	LaFeria
3710	WA4HND	Grand Junction
3714	AC3X	Westminster
3717	KB3AJF	Easton
3720	KH6FV	Honolulu
3733	KF6FKK	Napa
3735	WB6JAA	Grand Canyon
3736	N0OKL	Grand Junction
3740	WB3EHB	Camden
3747	K5MOT	Fort Worth
3750	W0KU	Golden
3753	WD5IEH	San Antonio
3756	AH6JA	Hilo
3762	WB5NFC	Mtn. Home, Arkansas
3773	W6TRW	Redondo Beach
3775	WB5TUF	Houston
3778	KL3K	Juneau
3780	WR6HMB	Half Moon Bay
3787	KL3K	Alaska Gateway
3790	WA6AXO	Juneau
3791	AD5KZ	Dallas
3792	K0VQ	Carbondale
3793	K7FAY	Parker
3797	N7EN	Gilbert
3799	KF7FLY	Rhome
3800	AH6JA	Hilo
3805	KE6PCV	Corona
3810	KG6EAO	Kapaa
3820	KC7GHT	Phoenix
3822	KL1IN	Wasilla
3827	K6EKB	Rainier
3830	WB5EKU	Los Angeles
3832	W5KOL	Richland Hills/ Ft. Worth
3834	KL3K	Seward
3840	K6IXA	Atwater
3846	WB6T	San Juan Capistrano
3851	WA6E	Loomis
3852	N1BEN	Hurst
3853	KE6MOW	Salinas
3856	KD6RC	Santa Rosa
3860	W6YDD	Folsom
3863	KE6ALV	Moreno Valley
3867	W5DEL-1	Oklahoma City
3873	WO3B	Shingle Springs
3875	W7DI	Minden
3876	NJ7J	Clearfield
3877	WA6KYZ	Ridgecrest
3879	K7CSO	Bloomington
3880	K6RTL	Sacramento
3890	N4OKL	Huntsville
3892	WD7F	Tucson
3895	K6MVR	Sacramento
3898	KH6FV-7	Kailua-Kona Airport
3900	K6MF	San Jose
3902	AB0SF	Fort Collins
3908	K9VKG	Sioux Falls
3915	K0RPT	Lincoln
3917	N7JYS	Russell
3920	K6MF	Santa Barbara
3922	KA7CJH	Reno
3924	KE7PO	Tucson
3925	N7XZ	Logan
3932	N7MHE	Moses Lake
3937	AB6PA	Moreno Valley
3940	WA6WDC	Sun Valley
3958	KC7VJY	Eugene
3960	N6SEX	Sacramento
3967	N6SGX	Ontario
3969	K7KAB	Loving/Graham
3971	W2IO	Erie
3976	W7BO	Woodland
3981	W7RY	Yacolt
3989	K5DX	Houston

Node ID	Call-sign	Location
3990	W0CRA	Denver
3999	N6ZSQ	Barstow
4000	WA3KOK	Washington
4008	KD1Z	Apollo Beach
4016	KE2EJ	Plainview
4020	KA2JZO	Pemberton Township
4022	KB4JDE	Miami
4028	KB1FX	Woburn
4030	N2ACF	Stony Point
4031	K9IU	Bloomington, IU ARC
4038	N3XXH	Laporte
4040	N2CKH	Lakewood
4050	N2BJ	New Lenox
4053	W2RAC	Daytona Beach
4060	W1IMD	Portland
4075	KP4E	Grosse Pointe Farms
4080	W2CNY	Syracuse
4090	KB2FAF	Cortland
4092	N1SZM	Meriden
4098	KA9OHV	Warsaw
4100	N3FE	Wellsboro
4102	W8HDU	Lima
4104	WW4M	Raleigh
4106	W8VFR	Eaton
4110	K0PCG	Des Moines
4112	KB8KPV	Charlevoix
4115	N3RBJ	Philadelphia
4116	WN8VIX	Green Bay
4120	KF6SWL	Omaha
4123	KQ6IN	Hampton
4125	W4DJY	Suwanee
4130	WA2ZPX	Middletown
4134	KP4EOP	Chicago
4140	WJ2W	Charlestown
4143	K1DWU	Selden
4145	WA4RYW	Atlanta
4149	N1LFE	West Haven
4150	N5IUF	Dallas/Ft.Worth
4156	WC4PEM	Bartow
4159	W1HDN	Vernon
4162	N1RSP	Gloucester
4165	KG8DZ	Columbus
4170	WB7RES	Caldwell
4172	W4NCR	Wilmington
4180	N4MSE	Dallas
4183	KA4VXR	Hampton
4186	K8EHB	Delaware-Columbus
4187	WB9TLH	Kirksville
4190	N4XQM	Atlanta
4196	N4TEC	Bradenton
4198	AC1V	Tolland
4200	AA4LB	Simpsonville
4204	N2VYS	New York City
4205	N2VSR	Rochester
4206	NS9RC	Winnetka
4207	N2LEN	Catskill
4208	KS4BO	Roanoke
4210	W2ISB	Liverpool
4212	KE9V	Muncie
4214	NM9J	Cortlandt Manor
4216	KA3T	Hanover
4224	KA2NRT	Browns Mills
4230	WS2V	Budd Lake
4231	KC9EBB	Skokie
4234	N3KZS	Hanover
4235	WB8VSU	Miamisburg-Dayton
4242	KB2NYH	Rosedale
4250	WR2AHL	Rochester
4254	W2FCC	West Arlington
4259	W1RJC	Dartmouth
4260	KD4RAA	Raleigh
4267	WF8M	Dayton
4269	W5YL	Thibodaux
4273	K5MES	Fort Smith
4277	K2MVR	New York
4280	W9ADS	Champaign-Urbana
4282	WB8CQR	Cleveland
4287	WB2SNN	South River
4290	N4HAJ	Kinston
4297	WB8AZP	Brighton
4300	N3APP	Erie
4302	W4NR	Miami
4304	N9RJZ	Menasha
4310	N3RJC	Lansdowne
4314	KB1GXW	Boston
4316	KB9KLD	Maryville
4317	K3ZMC	Pottstown
4320	W1QWT	Scituate
4330	K9WZ	Plymouth

Node ID	Call-sign	Location
4338	KE4TTE/L	Orlando
4339	N9TZN	Mishawaka
4348	KB4KDL	Portland
4350	W9DXN	Dixon
4360	W1CDO	Bellevue
4363	K9TA	Paxton
4370	W8HDU	Lima
4373	K8DAA	Holland
4376	KT4PA	Port St. Lucie
4377	W2OEM	Springfield
4380	W9BCC	Wausau
4383	WB8COX	Saline
4385	K2SGS	Highland
4386	KG4VQB	Jacksonville
4397	K4RCC	Cullowhee
4400	KC8NCE	Grand Haven
4402	N2CJE	Bay Shore
4405	WB9UEN	Milwaukee
4410	N9OIG	Union Grove
4412	K8HF	Mansfield
4415	W4PLT	Port Saint John
4419	WA3ITR	Wellesley
4420	W9SH	Duluth
4427	W2MKB	Coconut Creek
4428	KA2TSV	Milan
4430	K9DRF	Peoria
4435	KB8DOA	Miami Beach
4439	WB3KAG	Bridgewater
4440	KB3HF	St. Peters
4450	N8DNX	Stutsmanville
4451	N9GMT	New Berlin
4456	KB2DZR	Brooklyn
4460	WB8NXP	Southfield
4461	K2EAG	Lockport
4469	WA2JSB	West Orange
4477	KF4DWV	Greensboro
4480	K1IMD	Eastern Long Island
4490	WB2CIK	West Hills
4494	KC6HUR	Sylmar
4499	AB9D	Plainfield
4502	W8HP	Beverly Hills
4510	KD4Z	Orlando
4512	N9VMR	Chicago
4513	KC2CWT	Carmel
4516	W4WWM	Madison
4521	KB2TZR	Vernon
4523	W8AK	Dayton
4528	K3PHL	Philadelphia
4529	K8RPT	Maybee
4530	K4KSA	Tampa Bay
4537	N3HVC	Lake Worth
4538	WB2JPQ	Portable
4540	K0JPR	Lees Summit
4542	WA3KOK	Clarksville
4544	N2QKQ	Pine Brook
4548	KG4GOQ	Boca Raton
4549	KB0IXM	Fargo
4550	W4DOC	Atlanta
4554	KD4KTO	Morehead City
4556	K8BYI	Grosse Pointe
4572	K2CAD	Selden
4574	KB2OOJ	Elizabeth
4579	K1RFD	Ridgefield
4590	N1HUI	Branford
4595	KD4RAA	Raleigh
4596	W5NRU	Ellisville
4597	N8XHZ	Tiffin
4598	W2SB	Fredonia
4606	N9GMT	Milwaukee
4610	WA1NVC	Framingham
4613	N9GVU	Mishawaka
4617	KD1CY	Fairhaven
4620	N3JMD	Drexel Hill
4622	W2VER	Vernon
4629	WX4TCL	Pensacola
4630	N9EP	Barrington
4640	N5LEZ	Wichita Falls
4647	N4BSA	Clearwater
4650	KA1UAG	West Lebanon
4654	AF1JR	Clearfield
4655	WA9EOC	Anderson
4658	N3SHM	Philadelphia
4660	KI4L	Murfreesboro
4663	N1LFE	*NEW-ENG*
4664	N3EHL	Cherry Hill
4665	KB2RF	Freehold
4666	K2MTB	New Paltz
4668	WA2ZPX	Pequannonk
4670	N9UWE	Danville

Node ID	Call-sign	Location
4912	N4MCD	Lumberton
4922	N2FCC	Union
4923	KB2ERJ	Camillus
4925	KC2EUS	Gloversville
4927	W9BIF	Goshen
4930	W1ET	Hanover
4935	W2NJR	Asbury Park
4940	N9TSW	Des Plaines
4943	KB4ZIN	Williamsburg
4945	KY4K	Henderson
4948	N3CB	Plymouth Meeting
4950	W4VM	Huntsville
5447	M1SJX	Kingston Upon Hull
5450	GB3PZ	Manchester (UK)
5452	G4JBX	Tamworth
5470	8P6AW	Bridgetown
5474	LA8DR	Sandnes
5480	KJ7YE	Eden
5483	2E1BFH	Wellingborough
5510	MM0GEQ	Edinburgh
5514	G0VXN	Freckleton
5515	DB0VOX	Nuremberg
5520	KC4SFA	Key Largo
5530	KE6YRU	Oceanside
5540	KA2QEP	Mt Freedom
5550	KD7PSG	Bellingham
5560	N7TGB	Reno
5562	GB3IR	Richmond
5567	G1SSL	Didcot
5570	WB6GVO	San Luis Obispo
5580	KF5RH	Ardmore
5590	N9LKH	Milwaukee
5600	GB3LV	London
5610	K6VGG	Los Angeles
5620	WA7GIE	Salt Lake City
5630	WM5D	Rogers
5670	W7GMC	Great Falls
5678	G8UVE	Burnley (Test)
5690	WE8N	Warren County
5700	WA4RYW	Knoxville
5708	GB3XN	Langold
5710	WA4EVJ	Ft. Pierce
5720	NG5T	Lafayette
5740	WA6OUR	Sammamish
5770	KC4VDZ	Richmond
5780	WB7AWL	Oregon City
5799	SK4SQ/R	Leksand / Mora
5800	K2GXT	Rochester
5820	KG6AHV	Fairfax
5822	DB0RDT	Ingolstadt

Node ID	Call-sign	Location
5826	G4FLY	Reading
5850	KJ6W	Palmdale
5852	2E0TWS	Sheffield
5857	G0SXC	Whalley
5860	K7SPG	Seattle
5870	KC0EFC	Olathe
5883	EI7MLR	Waterford City
5890	WB2RYB	Malone
5904	G0NWE	Runcorn
5910	N3CJG	Ocean City
5920	N1JBC	Johnston
5930	K2CIB	Nyack
5933	G7PFT	Stafford
5939	GM3ZXG	Greenock
5960	N1BOW	Niantic
5973	G4EID	Southport
5990	K7CWA	Mesa
5994	M1LOU	Barnsley
6000	VK2RBM	Sydney
6010	VK2RMP	Wollongong
6020	VK2RMB	Terry Hills
6040	VK2RTZ	Newcastle
6050	VK2RCZ	Sydney
6060	VK2RAG	Gosford
6079	VK3RFY	Hillside, Melbourne
6100	VK6RNC	Perth
6110	VK1RBM	Canberra
6184	ZL4DM	Dunedin
6200	VK6RFM	Perth
6209	VK7NAU	Launceston
6210	VK2TTA	Wahroonga
6211	VK2DCL	Bathurst NSW
6214	VK5ZSN	Adelaide
6220	VK2RIC	Lismore
6222	VK2BGL	Southern Sydney
6230	VK2RMR	Mt Riverview
6233	VK2DOR	Scone
6240	VK2SRS	Berridale
6250	VK2ROT	Paddington
6260	VK2RWG	Wagga Wagga
6265	VK4RFT	Nerang
6285	ZL2KS	Blenheim
6288	VK2RCT	Campbelltown
6300	VK3RMC	Melbourne
6310	VK3RWA	Western Victoria
6320	VK3RRU	Merbein
6330	VK3RSP	Mt. Martha
6340	VK3DRB	Mt. Waverley, Melbourne
6350	VK3RMH	Melbourne
6360	VK3ROU	Glen Waverley

Node ID	Call-sign	Location
6363	VK2RGN	Goulburn
6370	VK3RSH	Swan Hill
6380	VK3RNE	Albury-Wodonga
6390	VK3RTL	Melbourne
6391	VK3RIR	Rosebud
6402	VK4RXG	Browns Plains
6405	VK4JAA	Gold Coast
6406	VK4ACN	Brisbane
6408	VK4RBS	Bayside
6430	VK4CCV	Brisbane
6444	VK4RAT	Townsville
6450	VK4RMK	Mackay
6493	ZL1TN	Howick, East Auckland
6499	VK3RSR	Melbourne
6500	VK5RAH	Adelaide Hills
6510	VK5RAC	Port Lincoln
6527	VK2IRL	Coffs Harbour
6600	VK6AMS	Karratha
6610	VK6RAL	Albany
6616	VK7AX	Ulverstone,NorthWest
6620	VK6XAA	Collie
6625	VK2EVB	Coffs Harbour
6700	VK7AX	Mt.Barrow,NorthEast
6702	VK4RGC	Gold Coast
6710	VK7DY	Tea Tree
6722	VK3HEG	Ballarat
6741	VK4RBM	Mackay
6772	VK6RVP	Perth (Victoria Park)
6782	VK4RAI	Ipswich
6793	ZL2AS	Hastings
6794	VK3RLP	Frankston
6800	VK8ZMA	Darwin
6875	VK5WSR	Millicent
6887	HL9NP	Ichon II Dong, Yongsan
6889	VK4RTW	Toowoomba
6900	ZL3TMB	Christchurch
6920	ZL2WKI	Palmerston North
6931	ZL2VH	Upper Hutt
6943	ZL2KO	Feilding
6950	ZL1BQ	Auckland
6973	VK4RAR	Rockhampton
7000	J73D	Roseau
7008	WP4NAT	Mayaguez
7992	PJ2BR	Willemstad
7999	ZF1DG	Savannah Meadows
8000	SK6BA/R	Mark
8010	SM4VBO	Falun
8030	SK7HR	Nassjo
8045	XE2NLI	Linares
8050	SK6QW	Gotene

Node ID	Call-sign	Location
8066	7J1YAA	Meguro-ku
8069	JL3YKH	Hirakata
8080	N0IAK	Fort Collins
8090	LA9XR	Heggedal
8120	WA6BAI	Visalia
8130	KG4SVX	Palm Bay
8170	W6RHC	Chico
8179	JP1YIS/R	Shinagawa-ku
8190	N9TO	Westmont
8200	7J1YAB	Ota-ku
8220	WA7ABU	Salem
8240	KR6WP	San Carlos
8250	KD5QYV	Abbeville
8260	KB2ZAK	Crescent City
8270	K4OBX	Hatteras
8274	XE3NO	Oaxaca
8300	ZS5HAM	Durban
8307	JP1YJC/R	Aoba-ku
8310	KB5KZS	Bartlesville
8330	WA4JRJ	Seneca/Clemson
8332	JQ1YEG	Meguro-ku
8380	W9FEZ	Fort Wayne
8390	KB6KJX	Ellensburg
8410	WB6TCS	Oakland
8420	K6BIV	Mt. Diablo
8427	ZS6QRK	Pretoria
8440	W5DEL-2	Oklahoma City
8520	N2TLD	Lake Grove
8549	JM1KGA	Shinagawa-ku
8550	AA8CC	Buckhannon
8555	ZS4B	Harrismith
8570	K1DWU	Selden
8600	PI2EHV	Eindhoven
8620	PI6EHN	Eindhoven
8632	JQ1YFK	Minamikoma
8654	W7RAT	Cannon Beach
8689	XE3BAJ	Tapachula
8700	ON0GRC	Gent
8710	KD5KTB	Enid
8720	WB5UGT	Houston - SGLS System
8730	KF6FKK	San Francisco
8749	JA1DPL	Aoba-ku
8760	AF4O	Bolivar
8770	KB7ZPL	Vancouver
8780	KD6HWU	Corvallis
8838	KC4AAC	Palmer Station
8930	KB0WYT	Scottsbluff
8950	M0HBK	Ascot
8952	XE1RCS	Ciudad de Mexico
8969	CA3JCO	La Reina

EchoLink

Developed in early 2002 by Jonathan Taylor K1RFD, EdhoLink is a computer program using the Voice-over-Internet Protocol to establish long-distance communications (DX). The program has spread rapidly among the ham community and is today used by over 120,000 radio amateurs in 150 countries.

Instead of using ionospheric layers to establish long-distance communications, K1RFD suggested to amateurs to use the Voice-over-Internet Protocol, using the Internet in combination with RF linking and especially with VHF and UHF FM transceivers to work other amateur stations.

EchoLink has four main user groups

Repeaters

(Eg, ZL3CAR-R) where a computer is connected to a local repeater by radio and any number of people in range of the repeater can use the system.

Links

(Eg. ZL2VBC-L) this normally means that there is a simplex radio link at the remote station, normally less range than a repeater station.

Home stations

(Eg. ZL3TMB) a ham's computer is connected to the Internet, normally this is a home station. Using headphone and a computer style microphone (no ham gear is required, just a call-sign).

Conference servers

(Eg. *ZL1VK*) these are just a computer with a very fast Internet connection, no radio gear is required by a server. These servers allow many stations to connect together.

The Papakura Radio Club operates an EchoLink conference server, *ZL1VK* (node 65001). Make sure you connect on Sunday nights from 7pm (New Zealand time) onwards. This server can be used to link computers, simplex radio links and repeater for running local, nationwide or international nets. It is available for both open nets or private nets.

Operating Guidelines

Usual operating practice on EchoLink is to operate just as if you were on amateur radio. If any link station (call-sign-L) or repeater station (call-sign-R) are connected to the conference, you *are* on the radio. Be aware that other users may be anywhere in the world. Please use commonsense and courtesy.

Specifically, pretend you are on a busy repeater. That means:

- Identify with your call-sign now and then. You don't need to ID every transmission.
- Leave a pause of a few seconds between transmissions. This gives others a chance to break in. It also lets linked radios and repeaters drop out, so they don't get timed out.
- If several people are active in conversations, consider turning it over to one specific station at the end of each transmission. Don't consider this mandatory, though. If there is a logical next person to speak, let that person speak. If not, then a simple rule is to rotate speakers in a fixed order. (The on-screen station list makes this easy. It is kept sorted with the most recent speakers on top. So just turn it over to the station on the bottom, or the lowest station who is actively participating.)
- If you want to have a long conversation with one other station, and the subject is not going to be interesting to others, consider dropping out of the conference and connecting directly. If you talk about something interesting, please stay on the conference.

For more information and a copy of the software, check out any of the following links: <http://www.echolink.org/>; <http://www.hamradio.co.nz/>; <http://www.qsl.net/zl1vk/>; <http://www.qsl.net/zl2ufi/>.

ARDF AMATEUR RADIO DIRECTION FINDING

What is ARDF?

In simple terms ARDF is looking for a transmitter. In IARU Region III ARDF is played on 80 m and 2 m

The competition would normally be in a rural area, preferably wooded valleys. Within this area are placed five transmitters that have to be found by the competitors. A sixth transmitter is usually provided at the finish line to help lost competitors find their way home.

Each transmitter will be keying a unique identification code in the form MOE, MOI, MOS, MOH, MO5. On VHF this will be MCW and CW on HF. These correspond to transmitters numbered one through five.

At the competition there may be several classes of competitor, not all classes are required to find all the transmitters.

Contestants are free to find the transmitters in any order they wish.

There is a time limit set for the course. Any competitor who has not finished within this time is disqualified. This time limit is set by the organizing group and takes into account the number of competitors, the terrain and the length of the course. IARU Region III rules recommends that it should be 100 to 140 minutes for a 4–7 km course.

The five transmitters on the course operate sequentially on a common frequency. Each transmitter will operate for one minute and then be silent for four minutes, during which the other four transmitters will operate.

In ARDF the transmitters are not usually "hidden", and in fact a competitor is only required to find the control point, which will be within 2 m of the transmitter. Figure 1 shows a typical control point.

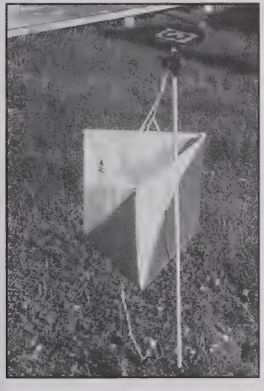


Figure 1.

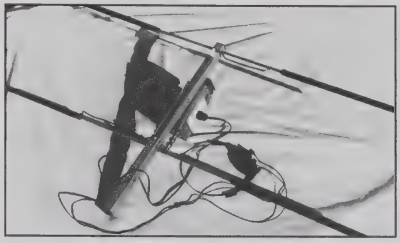


Figure 3.

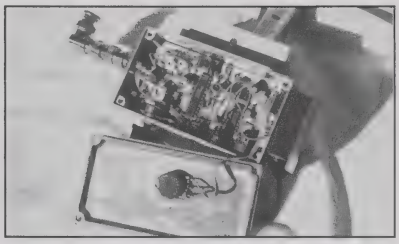


Figure 4.

Included at the control point is a "punch" that is used to mark your card to prove that you have visited the control point.

At each transmitter a referee will be sited to ensure there is no collusion between competitors as ARDF is an individual sport. Also the referee will ensure there is no "foul play", etc.

The "winner" of the event is the competitor who finds the most number of transmitters for their class in the shortest time.

What is needed to participate?

That depends a bit on you and on the course. It is possible to use a simple handheld. Any form of directional aerial can be used for ARDF, additionally an attenuator and a method of accurately determining signal strength would be useful.

As the level of competition becomes "keener" your equipment needs to become more refined. There are a number of commercial receivers available at a range of prices. Most of these receivers provide attenuators to cover a wide dynamic range and audible and visual strength indicators.

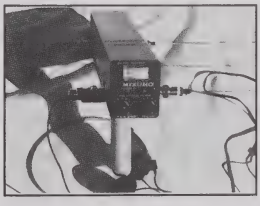


Figure 2.

Figure 2 shows a Japanese ARDF receiver. This is an excellent commercial design packed full of features. The unit is available from Apex Communications.[1]

A full set of equipment is available from Australia from Ron Graham.[2] Figures 3 and 4 are a couple of view of Ron Graham's VHF receiver. This is an AM dual conversion superhet based on the MC6632 chip. It is tuneable over the bottom part of 2 m and includes an audio signal strength indicator. The antenna is a modified HB9V.

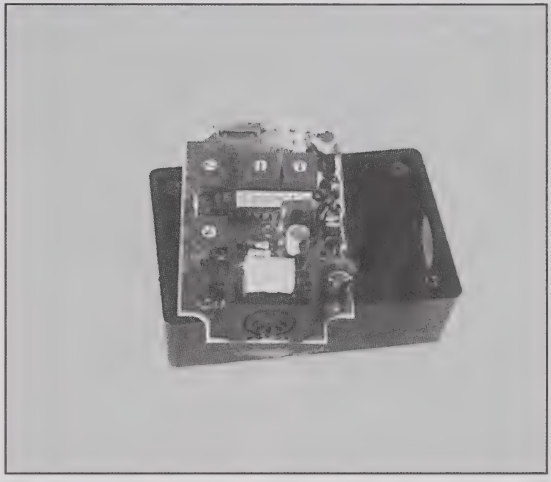


Figure 5.

The Auckland VHF Group[3] has available a microprocessor key that will meet most requirements (Figure 5). This was designed to interface with handhelds to provide Clubs with a quick and easy way to provide VHF ARDF transmitters. It also includes an output for keying a 80 m transmitter.

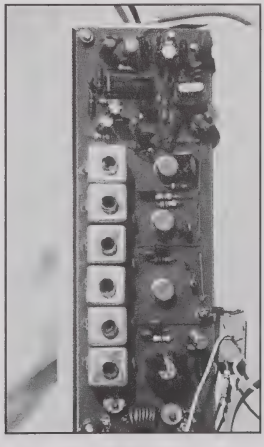


Figure 6.

Figure 6 shows a typical 2 m transmitter that can be used as the hidden transmitter.

How fit do I need to be?

If you can walk 5 km then you will be able to compete in club events with a degree of success.

As the level of competition increases, so must your physical "prowess". To become a Regional or World Champion you should expect to become very much more athletic.

For most people there is a great amount of participation and fun that can be had between these two extremes.

Happy ARDF

References

1. Dave Walker, Apex Communications, Napier. Telephone (06) 876-5014.

2. Ron Graham Electronics, Box 323, Sarina, Queensland 4737, Australia.

3. Auckland VHF Group, Box 10-138, Dominion Road, Auckland 1030.

One of the many facets of Amateur Radio is operating in a contest. This is basically attempting to make as many contacts as possible in a given length of time. It's a great way to improve your operating skills and to prove the ability of your station for making contacts while having some fun. Depending on the rules of the specific contest, those contacts may be on one band, or all the bands (generally WARC bands excluded) and the mode can be Phone, CW or Digital.

In most overseas contests, only one contact with each station on each band is permitted during the contest period. However, in New Zealand, due to the relatively low number of amateur radio operators in the country, the total contest operating time is often broken into contest periods, typically of one hour. The same station can be worked in each new period. This helps keep the level of interest and activity up on the bands.

For the newcomer to contests, getting started requires nothing more than to read the rules for the particular event and after establishing contact with another participant in the appropriate or chosen mode, exchange the required information. This exchange of information usually includes an RS(T) report and a number starting with 001 and increasing by one for each contact. This incrementing number is by no means the only method used and other reports may require your CQ or ITU Zone Number, your age, your name or your NZART Branch number. The idea is to generate a report that can be verified by the receiving station and therefore complete the QSO.

There are basically two contest operating methods:

Running—select a clear frequency (if possible), call CQ Contest on Phone or CQ Test on CW and answer all callers.

Search and Pounce—tune the band(s) in use and answer each CQ you hear being called.

It goes without saying that a station with efficient antennas is going to be hard to beat, but even with a simple dipole, very good results can be obtained. After a few attempts, the incentive to improve antennas, equipment and operating skills will be great.

Another way to break into contest operating is to join a group that participates in contests such as Branch teams in the Jock White Memorial Field Day Contest or groups that take part in international contests, such as the group at Auckland Contest Group or the Quartz Hill Group in Wellington. These groups tend to take part particularly in the premier international contest—the *CQ* World Wide SSB and CW contests on the last weekends of October and November. These contests are sponsored by *CQ* ham radio magazine, which also sponsors other contests.

To make closer contact with our neighbours across the Tasman, participation in a number of Australian contests is encouraged. Some of the Australian sponsored contests are; the John Moyle Memorial Field Day—third full weekend of March, trans/Tasman 80m and 160m Contest in May, June and July, Remembrance Day Contest—weekend nearest 15 August 0800 Saturday–0800 Sunday.

Contests organised by NZART.

Jock White Memorial Field Day

Last full weekend in February, 40/80m Phone/CW, Branch Field stations.

Thelma Souper Memorial

Refer to WARO column.

Sangster Shield Contest

Third full weekend in May 80m, CW only, QRP and new operators.

Memorial Contest

First full weekend in July, 80m Phone/CW/both, commemoration.

Waitakere Sprints (Sunday)

Last in July/first in August, 80m Phone, CW separate, one hour sprints.

Doug Gorman Memorial Frequency Measuring

First Monday September, 80m, Measure three frequencies.

Nostalgia Night

Second full weekend September 80m AM/CW old or WW II equipment.

Oceania Contest

First and second full weekend October, All band Phone (first weekend) and CW (second weekend).

Straight Key Night

First Sunday November, 80m CW, straight keys only.

The Thelma Souper Memorial is organised by WARO and the Waitakere Sprints are organised by the Western Suburbs Radio Club.

Full rules of the contests are given below and these are also available on the NZART Contest website <http://www.nzart.org.nz/nzart/update/contests>. Any changes to the rules plus dates etc. are given in the Contests column in *Break-In*. The calendar associated with the column lists the international and local contests for the coming months and gives full details of the more popular events.

Contesting, Internet and logging.

The Internet is very complementary to amateur radio in many of the facets of the hobby and this certainly applies to contesting. There are many sites dedicated to contests, most with links to other contest and allied sites such as DXing, software etc. There are several contest calendars which list all of the international contests month by month with links to the particular contest rules, previous years results, high scores etc. Some of the Announced DXpedition web pages list the DXpedition stations that have announced activity in a particular worldwide contest.

Other web sites have tools and aids for contesting such as logging programs like NZLog, CT, TR, Writelog etc., programs for practising phone and CW pile-ups, reflectors where discussions and stations claimed scores are listed. NZlog is produced by Denys ZL2AWH. A logging program used by many is CT by K1EA. The program can be purchased from the USA and can be updated as changes are made periodically. For example the DXCC list is changed periodically and the countries list in CT can be updated with a file from the web.

Logging programs ease the log-keeping chore once keyboard skills are obtained, and provide many features to facilitate contest operating. The main worldwide and USA contests plus DXpedition mode can be selected within CT and TR. The DXpedition mode can be used as a home station log. These logging programs cater for phone and CW operation with the "F" and other general keys being used for CQing, sending the exchange etc. The CW speed can be varied. TR by N6TR has two modes "Running" (CQing) and "Search and Pounce".

The programs also offer QSL label printing, interconnection with DX clusters and frequency changing of tranceivers to DX spots. New features are added periodically. CT versions have progressed up to version 10. Versions 8 and 9 require a 386 PC or better.

Some of the many websites related to contesting are

Contest Calenders

<www.sk3bg.se/contest/index.htm>.

<www.arrl.org/contests>.

<www.hornucopia.com/contestcal/>.

<www.hamradio.de/contest>.

CT Log Programme

<www.k1ea.com>.

KA9FOX Contest Score Rumours

<www.qth.com/ka9fox/scores.shtml>.

CQ Worldwide Contests

<www.cq-amateur-radio.com/awards.html>.

Contest Resources & Information

<www.contesting.com>.

<www.qsl.net/cwsp/k1ar92e.htm>.

<http://oh2aq.kolumbus.com/dxs>.

Announced DXpeditions

<www.usats.com/ce-dx.html>.

As Contest Manager, I am happy to provide full information on almost any contest held world-wide. Enclose a self-addressed, stamped envelope with your request.

Contests can be fun. Give it a go.

Jock White Memorial Field Day Contest

Last full weekend of February

This annual contest has been named to honour Jock White ZL2GX, NZART Contest and Awards Manager for over 40 years, for the service that he gave to NZART during that time. This contest, like many others, results from Jock's initiatives.

Home stations are now valid contacts in this contest and are encouraged to have a minimum of 50 Phone or 25 CW QSOs and to submit a log entry. The minimum numbers apply to the band being used or 50 and 25 on each band if on both bands.

This contest is primarily to test Branch organisation and weld a team of workers together. There is work for all members—XYLs, OMs, YLs and SWLs.

Of special significance

1. The term "Branch Points" replaces the more common term "multiplier" in these rules. Refer rule 14.2. There is no change in concept, just a name change.

2. The minimum number of contacts for a field station to qualify as

"Branch" points for other stations is 50 on Phone or 25 on CW. Refer rule 14.2.4.

3. Restrictions applying to the use of linear amplifiers are given in rule 7.1. Complaints about the use of linears will be investigated.

4. Team leaders should ensure that all of the team understands the rules and that newcomers are assisted with their operating technique.

5. Stations should be operated within the amateur "codes" as regards procedures, equipment, operating speeds etc.

6. Have you considered entering the QRP section?

7. Rule 15.4 has been amended so that signing of logsheets by the operator is not compulsory. This has been changed because of difficulties in doing this with computer logging. However, it is essential that the operators check the log after their period of operation.

8. Rule 16.2.2 has been amended to include e-mail address alongside of certificate address. Results can be sent to the e-mail address given.

Rules

1. **When:** The last full weekend in February each year.

Saturday: 0200–1100, 1700–2400 UTC. (1500–2400 NZT)

Sunday: 0000–0200 UTC (0600–1500 NZT).

2. **Bands:** 40 and 80 metres.

2.1 Simultaneous operation on 80 and 40 metres is permitted provided that only one receiver/transmitter is operational on any one band at any one time.

3. **Modes and contacts:**

3.1. Modes to be used are Phone to CW. Phones to CW contacts are not permissible.

3.2. Home stations wil identify themselves as such and field stations will identify themselves as such.

4. **Sites/shelter:** All equipment (except generators) to be under the same shelter. The shelter to be a tent (one or more tents within 10 metres of each other) erected on the weekend of the contest, mobile home or other vehicle (moved on to the site on the weekend of contest) .

5. **Antennas:** for field stations, to be raised no earlier than 2300 UTC on the Friday (1200 NZT on the Saturday). This takes into account that some may choose to erect antenna supports while others may use natural or standing supports, eg, hills, trees, towers, buildings, etc.

6. **Power:** for field stations must be from a source independent of the AC or DC mains—ie all power must be from batteries/engine alternator/vibrator/solar source/wind generator etc.

7. **Contest sections:** One section of the contest may be entered by any one station although that station may qualify for more than one section.

7.1. **Open sections:** The maximum output power from the transmitter final amplifier must not exceed the legal limit given in the Radio Regulations. Linear amplifiers may only be used to increase the power output of low power transmitters (eg 5–30 W) to the equivalent of a typical transmitter (ie nominal 100/150 W). These sections are for stations in the appropriate region or category. The trophies stated will be awarded to the highest scoring station in the section. Certificates will be issued to the winners of each section plus placegetters as warranted by entry numbers.

Field stations

7.1.1. **Northern Region** Section (Montgomery Cup)

7.1.2. **Central Region** Section (Patea Shield)

7.1.3. **Midlands Region** Section (ZL3/4 Trophy)

7.1.4. **Southern Region** Section ("4" Trophy)

7.1.5. **Single Operator** Section —operation unaided by any other person.

7.1.6. **CW only** Section—operation on either band or both bands CW only.

7.1.7. **Phone only** Section—operation on either band or both bands Phone only.

7.1.8. **Other Power** Section—power source solar, wind generator, water etc.

7.1.9. **80 Metres only** Section—operation on 80 metres only.

Home stations

7.1.10. **Northern Region** Section.

7.1.11. **Central Region** Section.

7.1.12. **Midlands Region** Section.

7.1.13. **Southern Region** Section.

7.1.14. **Overseas** Section.

A certificate will also be awarded to the overall highest scoring home station.

7.2. **QRP section** (W. M. Hall Memorial Cup): The maximum output power from the final amplifier must not exceed 5 watts.

8. **Operators:** The station should be operated by members of NZART except that operators being introduced to NZART and helpers need not be members. Indicate accordingly on the summary sheet.

9. **Mobile stations:** are eligible for contest purposes as field stations for contacts made from within one branch area only. The branch number used will be that of the area where the station is operated.

10. **Cypher exchanges:**

10.1. The cyphers given will consist of report and serial number/branch number. eg. 59001/11 on Phone and 599001/11 on CW.

10.2. Serial numbers will commence at 001 and increment by one for each contact.

10.3. Where simultaneous operation is used a separate serial number series will be used for each band.

10.4. Phone and CW numbers on one band are from the same number series.

11. **Branch number:** is the NZART Branch number for the area in which the station is operated except that stations may move a few kilometres from their home area to a suitable location. eg. city to country. Home stations will use the branch number 00.

11.1. If the chosen location is within another Branch area care must be taken not to clash with the other Branch station. The onus is on the "moved" station to ensure that there is no clash.

11.2. The Branch number of branches in recess may be used.

12. **Contest periods:**

12.1. There will be 18 periods between the even hours. eg. 1500–1600, 1600–1700, etc.

12.2. Contacts may be made with any field, ZL home or "overseas" station (refer rule 13) once each period on each mode on each band. ie. on 80m: once on Phone and once on CW, and on 40 m: once on Phone and once on CW, each period.

12.3. The contacts with any one station on Phone and CW on one band in a period, or on one mode at the end of one period and commencement of the next, may not be sequential except where 5 minutes have elapsed between those contacts.

13. **"Overseas" Stations:** are those located outside the New Zealand mainland, and in the South Pacific region. The prefixes that are eligible are: all VK, ZL5, ZL7, ZL8, ZL9, A3, FK, FO, FW, H4, P2, YJ, ZK1, ZK2, ZK3, 3D2, 5W.

14. **Scoring:** The final score will be the total of contact points (80 m + 40 m) × total Branch Points.

14.1. **Contact points:**

ZL Phone 3 per contact

ZL CW 5 per contact

Overseas Phone or CW 10 per contact

14.2. **Branch Points (multiplier):**

14.2.1. One Branch point is claimed for each Branch contacted on each band and mode. eg. One Branch point for contacting Branch 01 on 80 m phone, two Branch points for contacting Branch 01 on 80 m Phone and 40 m Phone or 4 Branch Points for contacting Branch 01 on 80 m Phone and CW plus 40 m Phone and CW, etc.

14.2.2. Only one station from a branch may be claimed as a Branch point for a mode on one band. However, where a Branch has more than one station active different stations contacted may be claimed for the other band or mode.

14.2.3. Stations using the same Branch number may contact each other for contact points but not for Branch points.

14.2.4. To qualify as Branch points for other stations, a field station must have a minimum of 50 contacts on Phone or 25 contacts on CW on each band that the station is active on. eg. if active on 80 m Phone, must have 50 contacts to count as one Branch point, if active on 80 m Phone and CW, must have 50 contacts on phone and 25 contacts on CW to count as two Branch points, etc.

15. **Logs:**

15.1. One log per station in order of time, except that where simultaneous operation is used one log per band is required.

15.2. Head each page with the call, Branch or HS for home station and the page number.

15.3. Log sheet layout order: date/time/station contacted/CW or PH/band/cypher sent/cypher received. NZART log sheets are preferred. Entry in the points column is not required as totals are done from a summary, but the points column can be used for checking purposes. A total of PH/CW/DX contacts on each page is useful for counting purposes.

15.4. Use a separate logsheet per period except that where there are very few contacts per period, several periods (ruled off between periods) can be on one sheet. The operator (not logkeeper) must check the log.

15.5. Highlight or underline each contact claimed as a multiplier.

15.6. Check for accuracy and rule through any duplicate contacts in a period.

16. **Summary:**

16.1. The summary and final score details are to be on the "Jock White Memorial Field Day" summary forms provided to Branch secretaries each year and also available from NZART HQ.

16.2. **Summary Sheet 1** contains:

16.2.1. call-sign used, Branch name and number or HS for home station.

16.2.2. postal address for certificates and e-mail address for results.

16.2.3. section entered (one only).

16.2.4. names and calls of operators/assistants.

16.2.5. Number of 80m Phone contacts.

Number of 80m CW contacts.

Number of 80m overseas contacts.

16.2.6. Number of 40m phone contacts.

Number of 40m CW contacts.

Number of 40m overseas contacts.

16.2.7. Calculation of contact points.

16.2.8. Branch points claimed for 80 Phone.

Branch points claimed for 80 CW.

Branch points claimed for 40 Phone.

Branch points claimed for 40 CW.

Total Branch points.

16.2.9. Total points claimed (contact points × total Branch points).

16.2.10. List transceivers/generator etc/power output.

16.2.11. Certification of power output and rule observance by two operators (except for single operator stations).

16.3 **Summary Sheets 2 and 3** contain a table for listing the CALL-SIGN of the station claimed as a Branch point for each branch on each band and mode. Count the number in each column and transfer the figure to summary sheet 1.

17. **Closing Date:** Logs should be posted to reach Stan White ZL2ST 54A Auckland Road, Greenmeadows, Napier by the Saturday which is four weeks after field day Saturday. eg. If Field Day is held February 24/25, logs to be received by 24 March (in a non-leap year). Late logs will not be eligible.

NZART Sangster Shield Contest

Presented to the amateurs of New Zealand by Mr R. Sangster in 1927, the Sangster Shield is for annual competition to be won by the most efficient station. In this respect it should be pointed out, that in addition to the efficiency of the equipment used, the efficiency of the operator is of the utmost importance. To win this contest marks an operator as one who not only knows how to obtain the most effectiveness from low power but also one who is most proficient in the art of telegraphic communication.

Rules

1. **When?** Third full weekend of May each year, between the hours of 2000 NZST and 2300 NZST on each evening. The maximum period of operation will be six hours.

2. **Power:** To compete for the Sangster Shield and Trophies the output of the transmitter *must not exceed 5 Watts.*

3. **CW to CW** contacts *only* are permitted.

4. All operations must be in the 80m band.

5. **Contacts:**

5.1. QSOs with any one station are permitted once only each half hour, based on an "even half hour" basis, eg 2000 to 2030,2031 to 2100 etc.

5.2. It is not permissible to claim QSOs with the same station "twice running", i.e. at the end of one half hour period and at the beginning of the next, unless a different station is contacted by one of the two stations between QSOs, or a time delay of at least five minutes elapses between QSOs.

6. All ZL entrants must be financial members of NZART, except for first time entrants qualifying for the Transistor Trophy.

7. All Radio Regulations must be observed.

8. To give QRP contestants a fair chance (particularly with DX stations) higher power stations are requested to operate above 3530 kHz.

9. **Logs:**

9.1. Quarto or A4 size paper—preferably NZART log sheets.

9.2. Data in this order: Date, Time, Station Call-sign, Cypher Sent, Cypher Received, Points Claimed.

9.3. **On a seperate sheet** a summary to show:

9.3.1. Entrant's callsign, name and address in BLOCK LETTERS.

9.3.2. Number of contacts with stations using 5W or less.

9.3.3. Number of contacts with stations using 6W or more.

9.3.4. Number of contacts with overseas stations.

9.3.5. List of different branches worked with the number and name of each branch as given in the Call Book (in branch number order) plus the callsign of the station claimed for that branch.

9.3.6. Total score—(total points multiplied by the number of branches worked).

9.3.7. Description of equipment, antenna and output power used.

9.3.8. Signed declaration that all contest rules have been observed.

10. **Cypher system:**

10.1. RST followed by branch number followed by power output—eg 569/11/04. indicating a 569 report; branch 11; and power of 4W. Power will always be given as two figures: over 100W will be given as 99, while below 10W will be preceded by 0.

10.2. Overseas stations are required to give RST plus a serial number beginning at 001.

11. **Scoring:**

For ZL entrants:

11.1. ZL to Overseas—10 points

11.2. ZL to ZL with Power given as 5W or less—5 points.

11.3. ZL using 5W or less to ZL with Power given as 6W or more—1 point.

11.4. ZL using 6W or more to ZL with Power given as 5W or less—1 point.

11.5. ZL using 6W or more to ZL with Power given as 6W or more—*not permitted for contest purposes.*

For Overseas entrants:

11.6. Overseas using 5W or less to ZL with Power given as 5W or less—10 points.

11.7. Overseas using 5W or less to ZL with Power given as 6W or more—5 points.

11.8. Overseas using 6W or more to ZL with Power given as 5W or less—5 points.

11.9. Overseas using 6W or more to ZL with Power given as 6W or more—*not permitted for contest purposes.*

11.10. Overseas to Overseas—*not permitted for contest purposes.*

Final score is total points multiplied by the Number of Branches worked. **Note:** Contacts with a Contestant's own Branch are OK for points but are not to be counted as a multiplier.

12. *Mobile or Mobile/Portable operation will be permitted for New Zealand stations*, however, the station *must* be operated from *one location each evening.* This means a station could operate from one location the first evening and another location on the second evening. The station must use the Branch number applicable to its location at the time. The entrant may combine both logs for contest purposes, but the logs must indicate their locations on both evenings. In this case then only one branch (either) is to be eliminated as an "own Branch" multiplier. Overseas Stations may be mobile or portable, but a maritime mobile station must be outside New Zealand's territorial waters to be counted as a DX contact.

13. **Discounted Contacts:** The Contest Manager expects that participating stations will provide a fair chance for all entrants to make contact with them. While it is not intended to discourage contestants from operating only part of the full contest it is considered that at least 20 contacts should be made and station operation should be over at least 3 half hour operating periods. Stations considered to have worked less than this requirement will have their contacts and branch multiplier contribution deducted from contest logs.

14. **Awards:**

14.1. ***Sangster Shield:*** to the highest scoring entrant using 5W or less and observing the rules as enumerated. (Note that all first time entrants qualifying for the Transistor Trophy will also be eligible for the Sangster Shield Award)

14.2. ***Transistor Trophy:*** to the highest scoring entrant using 5W or less and observing the rules as enumerated, but in addition who has been licensed for 12 months or less. Entrants must give Operator's Certificate number together with date of issue.

14.3. ***The "Arthur Stevens Trophy":*** will be presented to the highest scoring South Island entrant using 5W or less. (This trophy is in honour of Arthur, formerly ZL1MT, a very long time stalwart of the Sangster Shield Contest).

14.4. Certificates to the first three entrants using 5W or less, also to the first three "newly licensed" entrants qualifying for the Transistor trophy.

14.5. Certificate to entrant using 6W or more with the highest score.

14.6. Certificates to Overseas entrants with the highest score in their respective call areas.

14.7. Certificate to the branch with the highest aggregate score from three entrants operating in the QRP section. A minimum of three entrants are required to be eligible for this section. The top three scoring entrants for any Branch will automatically be aggregated—it is not necessary for a Branch to send in an entry for this section.

14.8. Logs must be posted to reach the Contest Manager, Glenn Kingston ZL2KZ, 53 Tannadyce Street, Wellington 6003, on or before the third Thursday of June.

NZART Memorial Contest

To commemorate those from our ranks who lost their lives in World War 2.

When: First Saturday and Sunday evenings in July. Six operating periods of one hour each from 2000 NZST to 2300 NZST each

evening.

1. Usual contest rules apply.

2. Single operator stations on the 80 metre band.

3. A station may be contacted twice during each operating period—once on Phone and once on CW provided that such contacts are not consecutive.

4. Mobile operation is permitted.

5. **Cypher System:**

Cyphers must be exchanged and acknowledged before points may be claimed for a contact. The cypher will consist of the RS(T) followed by a serial number starting at any number between 001 and 300 for the first contact and incrementing by one for each successive contact. eg if the first number is 599007, the next contact will be 599008 etc.

6. **Scoring:**

Phone

One point per Phone QSO.

CW

Two points per CW QSO.

Multiplier

The multiplier is one for each new prefix worked on Phone and one for each new prefix on CW.

Total score

Multiply the total of Phone and CW contact points by the multiplier. eg, for 100 Phone QSOs with ZL1, ZL2, ZL3, ZL4 and ZL6, the score is $100 \times 5 = 500$. For 100 Phone QSOs with ZL1–4 and 50 CW QSOs with ZL1–4, ZL6, VK1–3, W7, the score is $(100 + 100) \times 9 = 1800$.

7. **Logs**

The official log sheets available from the NZART Business Manager are the preferred log sheets.

Logs must show contacts in correct order of time. Do not group all ZL1, ZL2, ZL3 etc. contacts together.

8. **Summary**

A separate summary sheet must be completed and attached to the log sheets. This must show the following:

8.1. Call-sign of station and NZART Branch of which a member.

8.2. Name and full address of operator.

8.3. Section in which competing:

8.3.1. Open phone and CW (Memorial Trophy).

8.3.2. Open CW only (Auckland CW Cup).

8.3.3. "Beginners" CW only (Laing-Smith Cup).

Competitors in this section must state the number of their operator" certificate and the date of issue.

8.3.4. Low power phone and CW (Mannell Trophy).

8.3.5. Home made SSB equipment (Brother John Rodgers Plaque).

8.3.6. Phone only (Phil Armstrong Plaque).

8.3.7. Listeners section.

Rules as for the transmitting sections except that only the cypher sent by that station heard should be given. The callsign of the station heard and also of the station being "worked" must be stated.

8.3.8. Australian section. Rules as for the Open section.

8.4. Brief description of equipment used and power output.

8.5. Points summary (see Table 1).

8.6. Signed declaration that the contest rules and Radio Regulations have been observed.

9. **Submission**

All logs to be sent to "Memorial Contest Log", Win Gilbert ZL2GI, 146 Liverton Road, Lower Hutt, to arrive no later than four weeks after the contest date. Electronic logs are encouraged—on disk or by e-mail to <wgilbert@actrix.gen.nz>.

10. **Trophies**

Memorial Trophy. Donated by NZART in 1946. To be held for 12 months by the competitor with the highest score. Phone and CW may be used but contacts must be phone to phone or CW to CW. Phone to CW or vice versa is not permitted. A miniature is also awarded with the trophy, becoming the winner's personal property.

Auckland Shortwave Cup. Donated by the Auckland Shortwave Club in 1933 for Morse competitions. To be held for 12 months by the competitor operating CW only, who returns the highest score. Contacts must be CW to CW. Power limit is 150 Watts.

Laing-Smith Cup. Donated by Mr. L. E. Laing-Smith ZL1BO in 1958. To be held by the competitor returning the highest CW score who, at the time of the contest, has held an amateur operator's certificate for no longer than 12 months. Contacts must be CW to CW. Power limit is 150 W.

This is to encourage CW operation amongst new hams. To quote ZL1BO "Any method of inducing or encouraging the new hams to use CW until they are at least proficient" has my support.

Mannell Trophy. Donated by Mrs Mannell in memory of her son, who was killed in an aircraft accident while serving with RNZAF. To be held for 12 months by the competitor using a power not exceeding 10 Watts who returns the highest score. Phone and CW may be used but contacts must be phone to phone or CW to CW.

Ron Gray Memorial Shield. Presented by Mr. And Mrs. D Gray and Jock White ZL2GX in memory of Ron ZL1304, who was a regular competitor in the Listeners' Section, for the highest SWL score.

Brother John Rodgers Memorial Plaque. Presented by a group who appreciated his contribution to the hobby. For the competitor with the highest score using home made SSB transmitting equipment.

Phil Armstrong ZL1BMC (VK7MC) Memorial Plaque. To be held on an annual basis by the competitor with the highest score on phone only. All contacts must be phone to phone.

Waitakere Sprints—2001

The Western Suburbs Radio Club is pleased to announce that the Waitakere Phone Sprint will be held on the last Saturday in July and the CW Sprint will be on the first Saturday in August. The contests are of one-hour duration on 80m, and are open to all licensed amateurs in ZL, VK and Oceania call areas.

Object of the Sprints

The operator's basic goal in the sprints is to make as many contacts as possible, without duplication, during an hour of operation on a single band. Any contact with ZL, VK or Oceania stations on 80 during the contest period can be counted, but a station may be claimed only once.

Eligibility

The Waitakere Sprints are open to all licensed amateurs anywhere in the ZL, VK and Oceania call areas. SWL logs will also be welcome.

Contest Periods

Phone 1000 to 1100 UTC, on last Saturday in July

CW 1000 to 1100 UTC, on 1st Saturday in August

Frequencies

Phone: 3.550 to 3.700 may be used.

CW: 3.500 to 3.550 may be used.

Power

In fairness and consideration to others we request that *no linear amplifiers* be used in the contest

Contest call

CQ Sprint, CQ Test or CQ Contest.

Exchanges

Minimum exchange for a valid contact will consist of a serial number, sent and received. The serial numbers must start at 001 and increment by one for each contact made.

Note: Time and signal reports are no longer required.

Awards

Certificates will be awarded to the overall winner and to the best score in each ZL call area and to the best three scores from VK/Oceania. Other certificates may be awarded at the discretion of WSRC.

Special Awards

To encourage contestants to enter both Sprints we have decided to issue a Special Certificate to the entrant with the Highest combined score. The method of calculation will be (Phone points + CW Points) × 2.

All logs received will be considered for this award. To qualify for the multiplied points each log must contain a minimum number of valid contacts, ie. ten (10) for Phone, and five (5) for CW.

Logs

A separate log must be submitted for each Sprint and must be clearly marked Phone or CW.

Table 1. Poinst summary (insert 0 where mode not used)

	CONTACTS		POINTS	
PHONE		×1=		
CW		×2=		
CONTACT POINTS				PHONE + CW

NUMBER OF PREFIXES		Attach list of prefixes

	CONTACT POINTS		PREFIXES	TOTAL
TOTAL SCORE		×		

Contest logs must show for each contact: call-sign of station worked, serial number sent, serial number received.

SWL logs must show both call-signs in the QSO also both serial numbers.

Logs are to be in the hands of the contest manager, ZL2ALW, by mail to: Waitakere Sprint Contest, 70 Waima Crescent, Titirangi 1007, Waitakere City, or by e-mail (preferred) <zl2alw@post.com>, no later than September 1.

Operator Information

Each log must show the following details.

Mode
Callsign
Name
Address
Operating area (Eg. ZL1,ZL2)
Total Number of contacts claimed
A declaration that the operator has abided by the rules and spirit of the contest.

Any entry which is clearly in violation of the rules or spirit of this contest or which contains an excessive number of duplicate contacts (this does not refer to duplicates which have been indicated as such and are not claimed) may be disqualified. The decision of WSRC Inc in respect of interpretation of these rules, the granting of awards and disqualifications will be final and no correspondence will be entered into.

Andrew Barnett ZL2ALW
Contest Manager WSRC

Doug Gorman Memorial Frequency Measuring Contest

When?

First Monday in September at 0915 UTC (2115 NZT).

1. Listen to ZL6A on approximately 3900 kHz for instructions on the frequencies that will be used and the procedure to be adopted. All instructions will be given by ZL6A.

2. Read each frequency as accurately as possible. To qualify for an award it is essential to read each of the three frequencies.

3. Post your entry to: Doug Gorman Frequency Measuring Contest, NZART, PO Box 40-525, Upper Hutt.

4. Entries should be sent within seven (7) days, together with details of equipment used and which section entered (eg, John McKim Cup or Norm Edwards Shield).

5. **Judging**

The degree of accuracy will be judged by subtracting your readings from the official reading. The resultants will be averaged to arrive at a final degree of accuracy.

6. **Awards**

6.1. John McKim Cup for those using simple direct reading type of equipment such as a receiver using a calibrated dial or LED readout to one decimal place, ie 3900.0 kHz. A simple heterodyne type frequency meter (BC221/LM10, etc), whether commercial or homemade.

6.2. Norm Edwards Shield for those using "sophisticated" equipment which might include receivers with LED readout to two or more decimal places (ie, 10 Hz or better). Computer, oscilloscopes, audio generators, etc, used singly or in combination, whether commercial or home made.

6.3. Branch Award certificate to the branch with the lowest average of the three best competitors. If you wish to support your Branch, state you Branch number and name on your entry form.

6.4. Certificates to all those whose average deviation is 200 Hz or better.

If you make readings during this activity, but do not wish to have your results published, please drop us a line so we know how many people were interested.

73 de Neil ZL2TNG and Gavin ZL2ACT

Nostalgia Night Contest

Nostalgia Night will be held each year on the second Saturday of September—put it in your diary now. This will give you plenty of time to fish out that old gear, check it out, make any necessary repairs, and then have a night of enjoyment just like the "good old days". Remember how much fun it was to go on the air? Nostalgia Night puts the fun back into Ham Radio. Put in plain language that means: drift, noise, smoke, heat, fading, and other fun things

Haul out that old equipment, dust off the cobwebs, check it over and join ina night of nostalgic fun. This year's contest will be in three sections, catering for the varied interests within the old equipment enthusiasts' ranks:

1. QRP;
2. Military;
3. Open.

The overall winner shall be the entrant having the highest points score which will be published in the following *Break-In.*

When?

Second Saturday in September, with four operating periods—each haf an hour:

0700–0745 UTC (1900–1945 NZT);
0745–0830 UTC (1945–2030 NZT);
0830–0915 UTC (2030–2115 NZT);
0915–1000 UTC (2115–2200 NZT).

Equipment

Any rig of the past that uses thermionic valves, be it home made, of military origin, commercial or amateur, no solid-state of SSB type equipment is acceptable for this event.

Cypher

RS(T) plus branch number.

Points

Three points for Phone to Phone QSO. Six points for CW to CW QSO.

Multiplier

Each NZART brnach worked (eg, 10 branches worked overall and 30 contacts:

10×30=300, not 10 branches each period.

ZL1 to ZL3 or ZL4 or reverse multiply by 1.2.

ZL2 to ZL4 or reverse multiply by 1.2.

Total Points

QSO points multiplied by number of branches.

BUT

1. QRP section—if your rig is 5 W or less input, then multiply your score by 1.5.

2. If your rig is of military origin, ie, ZC1, ARC5, 19 SET, then multiply your score by 1.2.

3. Open section—if your rig is other than 1 or 2 but within the power limit no multiplier. The power limit is the legal power limit.

BUT

Only one multiplier may be chosen (eg, military OR QRP—not both).

Repeat QSOs:

These are permitted each operating period on Phone and CW, but no consecutive contacts with the same station.

Logs

Send to: Nostalgia Contest, Mike Digby-Smith ZL1MDS, 6 Baird Avenue, Te Kauwhata, within seven days with the following data.

1. Number of QSOs on CW.

2. Number of QSOs on Phone.

3. Number of different branches worked.

4. Score claimed (points × branches).

Doug Gorman Memorial Frequency Measuring Contest 2000 Entry Form

Name _____ Call-sign _____

Branch _____

Details of all equipment used:

Make _____ Model _____

Comments _____

Section entered (please tick):

John McKim Cup Norm Edwards Shield Branch Award

Measured Frequencies:

1. _____kHz 2. _____kHz 3. _____kllz

Post entry to: Frequency Measuring Contest, NZART, P0 Box 40~525, Upper Hutt

5. Overall score claimed (points in 4 multiplied by section 1 or 2 as applicable).

6. Details of equipment used for the event.

7. Any comments about event or suggestions.

8. Do not send a copy of your log or contacts, just the above information.

9. Have a log of fun on the night.

Mike Digby-Smith ZL1MDS
<mike.ds@paradise.net.nz>
Barrie Vivian ZL2LA

Oceania DX Contest

1. Special notes (2004)

- Electronic logging is now compulsory for logs containing more than 50 contacts (2004 rule change), see rules 12 and 13 for details. While paper logging is still acceptable for a few contacts, it is much easier for the contest committee to get the results out quickly if electronic logs are provided.
- Electronic logs are to be in cabrillo format which is now generated by all of the popular contest logging software (2004 rule change).
- A reminder that Single-Op Single Band logs are to record *all* contacts made by the station—both on the band chosen for the entry and on any other bands (2002 rule change).
- Stations must log a minimum of 10 contacts to be eligivle for an award (2004 rule change).
- A new trophy is available for the top Oceania station in the Single Operator All Band CW category (2003 rule change).
- Further information on the contest is available from the Oceania DX Contest website at <www.oceaniadxcontest.com>.

2. Aim of contest

The aim of the contest is to promote HF contacts with stations in the Oceania region (VK, ZL, Pacific Islands and other locations within the IARU "Worked All Continents" Oceania boundary).

3 Contest periods

Phone Contest: 0800 UTC Saturday to 0800 UTC Sunday on the first full weekend in October.

CW Contest: 0800 UTC Saturday to 0800 UTC Sunday on the second full weekend in October.

The object is for:

- Oceania transmitting stations to contact as many stations as possible both inside and outside the Oceania region.
- Non-Oceania transmitting stations to contact as many as possible inside the Oceania region. There is no penalty for working non-Oceania stations but contacts between non-Oceania stations will score no points or multiplier credits.
- Oceania receiving stations (SWL) to hear as many contest stations as possible both inside and outside the Oceania region.
- Non-Oceania receiving stations (SWL) to hear as many contest stations as possible inside the Oceania region.

5. Bands

160m–10m (no WARC bands).

6. Entry catagories

- **Single Op**—Single operator, all bands or single band. Single operator stations are where one person performs all operating, logging and spotting functions. Only one transmitted signal is allowed at any time.
- **Multi-One**—Multiple operators, single transmitter, all bands. Only one transmitter and one band permitted during the same time period (defined as 10 minutes). Exception: one—and only one—other band may be used during any 10-minute period if—and only if—the station worked is a new multiplier. Logs found in violation of the 10-minute rule will be reclassified as Multi-Multi. All operation must take place from the same operating site.
- Multi-Multi—Multiple operators, multiple transmitters, all bands. No liit to transmitters, but only one signal and running station allowed per band. Note: all transmitters and receivers must be located within a 500-metre diameter area or within property limits of the station licensee, whichever is the greater. All operations must take place from the same operating site.
- **SWL**—Short Wave Listener (receive only). All bands.

7. Exchange

RS(T) report plus a three or four digit number starting at 001 (or 0001) and incrementing by one for each contact. If necessary, Multi-Multi entries can use a separate serial numbeer for each band.

8. Multiplier

The multiplier is the number of different prefixes worked. Note that the same prefix may be counted once on each band for multiplier credit.

A *prefix* in the letter/numeral combination that forms the first part of the amateur call—the same as the *CQ* WPX contest definition.

Examples of valid prefixes are N8, W8, HG1, HG19, KC2, OE2, OE25, etc. Any difference in the numbering, lettering, or order of the same shall constitute a separate prefix. A station operating from a DXCC country different from that indicated by its call-sign is required to sign portable. The portable prefix must be an authorised prefix of the country/call area of operation. In cases of portable operation, the portable designator will then become the prefix. Example: N8BJQ operating from Wake Island would sign N8BJQ/KH9 or N8BHQ/NH9. KH6XXX operating from Ohio must use an authorised prefix for the US eighth district (W8, K8, etc). Portable designators without numbers will be assiged a zero (Ø) after the second letter of the portable designator to form the prefix. Example: N8BJQ/PA would become N8BJQ/PAØ. All calls without numbers will be assiged a zero (Ø) after the first two letters to form the prefix. Example: XEFTJW would count as XEØ. Maritime mobile, mobile, /A, /E, /J, /P, or interim licence class identifiers do not count as prefixes.

Special event, commemorative, and other unique prefix stations are encouraged to participate. Prefixes must be assigned by the licensing authority of the country of operation.

9. Contact points

All entries score 20 points per contact on 160m; 10 points on 80m; five points on 40m; one point on 20m; two points on 15m; and three points on 10m.

Note that the same station may only be counted once on each band for contact point credit.

10. Final score

The final score is the sum of the contact points multiplied by the multiplier (total number of prefixes worked), ie, sum of contact points from all bands multiplied by the total number of prefixes worked on all bands. Remember that the same prefix can be counted once on each band.

11. General Log requirements

Transmitting entries are to submit a log showing the following details for each contact—band or frequency, mode, date, time in UTC, call-sign of station worked, RS(T) and serial number sent, RS(T) and serial number received. Single-operator single band logs are to record *all* contacts made by the station—both on the band chosen for the entry and any other bands. Multi-One logs must be submitted in date/time order.

SWL entries are to submit a log showing the following details for each contact—band or frequency, mode, date, time in UTC, call-sign of "station heard", call-sign of "station being worked", RS(T) and serial number sent by the heard station. The same call-sign may appear only once in any group of three consecutive entries in the "station being worked" column. Note that in thecase of non-Oceania SWL entries, only Oceania call-signs should appear in the "station heard" column.

All duplicate contacts must be shown—*do not* delete duplicate contacts. No penalty will be applied to duplicate contacts.

Although no signed declaration is required, by submitting a log, you are deemed to have made a declaration that you observed the contest rules and operated within the limits of your licence.

12. Electronic Logs

Electronic logs are preferred and are *compulsory for logs containing more than 50 contacts. Electronic logs are to be submitted in cabrillo format.* The abrillo log file must include both an accurately completed header (containing the summary information) and the QSO log data. All of the fields in the cabrillo header must be completed except for the ARRL Section, Power Category Overlay and Soapbox lines. SWL entries are to use the same cabrillo QSO line format as transmitting stations, except there is no requirement to include the received RS(T) and serial number information. See www.oceaniadxcontest.com for the latest information on the cabrillo format requirements.

The log file name is to be in the form call-sign.log, for example, if ZL2WB submits a Cabrillo file then it should be named zl2wb.log. Send the file as an e-mail attachment to <ph@oceaniadxcontest.com> (for Phone entries) or <cw@oceaniadxcontest.com> (for CW entries). *Note that the log file must be sent as an attachment*, not as text or content within the e-mail message. The e-mail message subject line must include the entry's call-sign, Mode (CW or Phone), entry category and the word "OCEANIA". Do not zip files and only include one log entry in each submission.

The Committee is considering introducing an e-mail robot to automate the checking of the incoming cabrillo logs. Further information will be posted at <www.oceaniadxcontest.com>.

13. Paper Logs

Electronic Logs are preferred (as per the requirements in 12 above) but if this is not possible then paper logs in the Oceania DX Contest format are acceptable, provided they contain less than 50 contacts.

Each paper log is to be accompanied by a summary sheet that clearly states:

- The station's call-sign.
- Operator call-sign(s).
- Entrant's name and mailing address (for receipt of awards).
- Mode and Category entered.
- Contact points claimed on each band.
- Number of multiplier prefixes claimed on each band.
- Total claimed score.

Official log sheets and summary can be downloaded from the Oceania DX Contest website at <www.oceaniadxcontest.com> or obtained by sending a Self Addressed and Stamped Envelope to the address below with sufficient return postage. If official forms are not available then you may make your own in accordance with the general requirements outline above and in Section 11.

Paper Logs are to be posted to: Oceania DX Contest, C/- Wellington Amateur Radio Club Inc., PO Box 6464, Wellingto 6030, New Zealand. Only one entry is to be included in each submission. Airmail is preferred if you are submitting a log from outside VK or ZL.

14. Deadline

All logs must be e-mailed or postmarked NO LATER than November 7. The reception of logs will be confirmed via e-mail (for electronic submissions) and a listing of all logs received will be posted on the Oceania DX Contest website at <www.oceaniadxcontest.com>.

15. Awards

To be eligible for an award, stations must log a minimum of 10 contacts.

Certificates will be awarded to the top-scoring station in each category listed under Section 6 for each IARU WAC continent and each country. The following trophies and plaques will also be awarded.

Oceania

- Top entrant from Oceania in Single Operator All Band Phone category—Ron Wills ZL2TT Memorial Trophy sponsored by ZL2GI, ZL2AL, Wellington Amateur Radio Club and NZART.
- Top entrant from Oceania in Single Operator All Band CW category—trophy sponsor to be confirmed.
- Top entrant from VK in Single Operator All Band CW category—Frank Hine CK2QL Memorial Trophy sponsored by WIA Federal.
- Top entrant from VK5 or VK8 call areas in Single Operator All Band Phone category—Plaque sponsored by WIA South Australia Division.
- Top entrant from VK5 or VK8 call area in Single Operator All Band CW category—Plaque sponsored by WIA South Australia Division.
- Top entrant from VK7 call area in Single Operator All Band phone category—Plaque sponsored by WIA Tasmania Division.
- Top entrant from VK7 call area in Single Operator All Band CW category—Plaque sponsored by WIA Tasmania Division.

Asia

- Top Entrant from Asia in Single Operator All Band Phone category—Plaque sponsored by Australia Eastern Mountain and Districts Radio Club.
- Top Entrant from Asia for Single Operator All Band CW category—Plaque sponsored by Australia Eastern Mountain and Districts Radio Club.

North America

- Top entrant from North America in Single Operator All Band Phone category—Plaque sponsored by N6RO.

Additional awards may also be allocated at the discretion of the Contest Committee.

16. Disqualification

Violation of the contest rules, unsporting conduct, taking credit for excessive unverifiable contacts or multipliers will be deemed sufficient cause for disqualification. The use of non-amateur radio means such as telephones or e-mail, or the use of Packet, to solicit contacts during the contest is unsporting and the entry may be subject to disqualification. In matters of dispute, the actions and decisions of the Contest Committee are final.

17. Further information

The latest information about the contest will be published on the Oceania DX Contest website at <wwwoceaniadxcontest.com>. Any questions can be e-mailed to <info@oceaniadxcontest.com> or posted to Iceania DX Contest, C/- Wellington Amateur Radio Club Inc, PO Box 6464, Wellington 6030, New Zealand.

NZART Straight Key Night

Polish and lubricate that old morse key and enjoy an evening of old time radio fun. An activity night in which everyone can be a winner with a certificate to prove it.

When: First Sunday in November 2000–2300 NZST.

Band: 80 m (3.5 MHz) only.

Mode: CW sent with *straight key* ie characters formed manually, no system of automatic dots, dashes or spacing permitted.

Divisions: Vintage QRP, Vintage QRO, Open QRP, Open QRO.

Explanation: Vintage: Receiver and transmitter or transceiver using valves, no solid state devices in the signal line permitted. QRP: 5 watts or less RF output.

Exchange: RST/QTH/operator's name (one word)/key used (e.g. ZC1, P&T)/TX type (eg ZC1, FT1000, homebrew)/TX power (watts). Except for DX stations (ie non ZL mainland) only rst, operators name, and QTH need be exchanged.

Scoring: 1 Point per QSO. Stations may be worked once, CW to CW only. All stations submitting logs *must* use a straight key throughout, but straight key stations may QSO stations using bugs, electronic keyers or keyboards.

Multipliers: Vintage QRP multiply total points ×2, Open QRP multiply×1.5, Vintage QRO×1.2, Open QRO ×1.

Logs: Each log QSO entry to show: Time (NZST or Z), callsign, RST, QTH, name, key type, Tx type, Tx power (of station worked).

Calculate total score, mutiply to give total score claimed.

Logs to have associated data sheet giving entrant's: name, callsign, QTH, age (optional), full description of equipment used ie key, Tx/Rx, Tx power, antenna.

Send logs by email, mail, fax, *on or before November 20* to: Barry Kirkwood ZL1DD, 66 Cory Rd, Palm Beach, Waiheke Island 1240, Telephone/fax (09) 372-5161, e-mail: <bjk@ihug.co.nz>.

Certificates will be sent to the top three stations in each Division (including DX entrants who send in logs). All other entrants will receive a personalised certificate if an A4 self-addressed envelope is sent to the Straight Key Night manager. Any photos of operators and/or equipment gratefully received.

NEW ZEALAND VHF/UHF/SHF/EHF CONTESTS

There are five contests which are spaced over the period of a year. The contests are during Saturdays and Sundays, with 1 hour contest periods occurring from 1600 to 2200 on the Saturday and 0800 to 1400 on the Sunday.

The Contests are

Cliff Betson Memorial Contest

All bands 50 MHz and up. Usually aligned the Australian Ross Hull Field Day (second weekend in January).

Hibernation Contest

All Bands 50 MHz and up. First weekend in April (delayed a week if it coincides with the Technology Convention).

Brass Monkey Contest

All bands 50 MHz and up. First weekend in July.

Microwave Contest

All Bands 614 MHz and up. First weekend in October.

VHF Field Day

All Bands 50 MHz and up. First weekend in December.

A large number of portable/ field stations take part, and the participation of home stations and stations from clubrooms is highly encouraged. In the last few years the number of stations participating has increased. VHF Field Day is well supported, but the popularity of the other contests would be helped by more participants.

The distances covered are often 400 to 600 km on 2 m and 70 cm, while the microwave bands can exceed several 100 km, depending on conditions.

There is a ZLVHFCONTEST reflector on Yahoo Groups, which is supported by many of the contest operators. Other activities are sometimes posted there as well.

It is recommended that radio equipment, batteries and other hardware used for field days is well checked beforehand as parts may go faulty, missing or flat.

Last thing ... Have Fun.

For further VHF/UHF/SHF/EHF contest information go to <http://www.nzart.org.nz/nzart/Update/Contests/vhfcontestrules.html> or contact me either via email at <rfman@xtra.co.nz> or via the *Call Book* address of ZL1UJG.

Kevin Murphy ZL1UJG

WORLD HF CONTEST CALENDAR

Mode	Contest	Sponsor	Weekend	Times
January				
CW	HA-DX	MRASZ (Hungary)	Third full	Saturday 0000–Sunday 2400
CW	*CQ* WW 160	*CQ Magazine*	Last full	Saturday 0000–Sunday 2400
PH	Belgium DX	UBA	Last full	Saturday 1300–Sunday 1300
CW	French DX	REF	Last full	Saturday 0600–Sunday 1800
February				
R	*CQ*/RJ WW RTTY WPX	*CQ Magazine*/RTTY	Second full	Saturday 0000–Sunday 2400
M	PACC	VERON (Netherlands)	Second	Saturday 1200–Sunday 1200
CW	ARRL-DX	ARRL	Third full	Saturday 0000–Sunday 2400
PH	*CQ* WW 160	*CQ Magazine*	Last full	Saturday 0000–Sunday 2400
PH	French DX	REF	Last full	Saturday 0600–Sunday 1800
CW	Belgium DX	UBA	Last full	Saturday 1300–Sunday 1300
March				
PH	ARRL-DX	ARRL	First full	Saturday 0000–Sunday 2400
CW	Commonwealth	RSGB	Second full	Saturday 1000–Sunday 1000
R	BARTG	BARTG	Third full	Saturday 0200–Monday 0200
M	Russian DX	RDXC	Third full	Saturday 1200–Sunday 1200
PH	*CQ* WPX	*CQ Magazine*	Last full	Saturday 0000–Sunday 2400
April				
PH	SP-DX	PZK (Poland)	First full	Saturday 1500–Sunday 1500
M	YU-DX	Yugoslavia	Third full	Saturday 1200–Sunday 1200
M	Holyland DX Contest	IARC (Israel)	Third full	Saturday 0000–Saturday 2359
M	Helvetia	USKA (Switzerland)	Last full	Saturday 1300–Sunday 1300
May				
M	ARI International DX	ARI (Italy)	First full	Saturday 2000–Sunday 2000
R	VOLTA RTTY	COMO/ARI (italy)	Second full	Saturday 1200–Sunday 1200
M	*CQ*-M International DX	Krenkel CRC (Russia)	Second full	Saturday 1200–Sunday 1200
CW	*CQ* WPX	*CQ Magazine*	Last full	Saturday 0000–Sunday 2400
June				
CW	WW-South America	LABRE (Brazil)	First full	Saturday 0000–Sunday 1600
PH	Portugal Day	REP (Portugal)	Second Saturday	Saturday 0000–Saturday 2400
R	ANARTS Digital Contest	ANARTS (Australia)	Second full	Saturday 0000–Sunday 2400
CW	All Asia	JARL (Japan)	Third full	Saturday 0000–Sunday 2400
CW	IV Marconi Memorial	ARI (Italy)	Fourth full	Saturday 1400–Sunday 1400
July				
M	Venezuelan Independence	RCV	First full	Saturday 0000–Sunday 2400
M	IARU Championships	IARU/ARRL	Second full	Saturday 1200–Sunday 1200
PH	IOTA Contest	RSGB	Last full	Saturday 1200–Sunday 1200
R	Russian RTTY	Russia	Last full	Saturday 0000–Sunday 2400
August				
CW	WAE-DX	DARC (Germany)	Second full	Saturday 0000–Sunday 2400
R	SARTG WW RTTY	SARTG (Scandinavia)	Second full	Saturday 0000–Sunday 1600*
M	SEANET-DX	SEANET (Thailand)	Third full	Saturday 1200–Sunday 1200
CW	TOEC WW Grid	TOEC (Sweden)	Fourth full	Saturday 1200–Sunday 1200
M	YO-DX	FRR (Romania)	Last weekend	Saturday 1200–Sunday 1200
September				
PH	All Asia	JARL (Japan)	First full	Saturday 0000–Sunday 2400
PH	WAE-DX	DARC (Germany)	Second full	Saturday 0000–Sunday 2400
CW	Scandinavian Activity	Scandinavia	Third full	Saturday 1200–Sunday 1200
PH	Scandinavian Activity	Scandinavia	Fourth full	Saturday 1200–Sunday 1200
R	*CQ*/RJ WW RTTY	*CQ Magazine*/RTTY	Last full	Saturday 0000–Sunday 2400
October				
R	Tara PSK31 Rumble	TROY (USA)	First Saturday	Saturday 0000–Saturday 2400
PH	RSGB 21/28 MHz	RSGB	First Sunday	Sunday 0700–Sunday 1900
PH	Oceania Contest	NZART/WIA	First full	Saturday 0800–Sunday 0800
CW	Oceania Contest	NZART/WIA	Second full	Saturday 0800–Sunday 0800
M	Worked ALL Germany	DARC	Third full	Saturday 1500–Sunday 1500
CW	RSGB 21/28 MHz	RSGB	Third Sunday	Sunday 0700–Sunday 1900
PH	*CQ* World-Wide	*CQ Magazine*	Last full	Saturday 0000–Sunday 2400
November				
M	Ukranian DX	Ukraine	First full	Saturday 1200–Sunday 1200
CW	OK/OM-DX	Czech Republic	Second full	Sunday 0000–Sunday 2400
R	WAE RTTY	DARC (Germany)	Second full	Sunday 0000–Sunday 2400
M	LZ-DX	Bulgaria	Third full	Saturday 1200–Sunday 1200
CW	*CQ* World-Wide	*CQ Magazine*	Last full	Saturday 0000–Sunday 2400
December				
CW	ARRL 160 m	ARRL	First full	Friday 2200–Sunday 1600
M	ARRL 10 m	ARRL	Second full	Saturday 0000–Sunday 2400
CW	Croation	HRS	Third full	Saturday 1400–Sunday 1400

Key: M = Multimode; PH = Phone; CW = CW; R = RTTY, * = not continuous. All times are UTC.

Most international contest dates are co-ordinated on a worldwide basis by the IARU, but local events can be influenced by moveable dates such as Easter. It pays to check the rules and dates with the organisers—just to be sure.

REGIONS – GUIDING LIGHT – CENTURY AWARDS

NZR
NEW ZEALAND REGIONS AWARD
by NEW ZEALAND ASSOCIATION OF RADIO TRANSMITTERS INC
Awarded to:
Sample ZL1XYZ
For making two-way contacts with amateur radio stations in at least 4 Regions and 18 Districts.

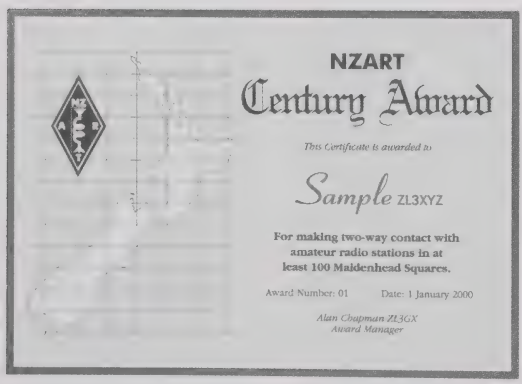
NZART Regions Award Basic Certificate for working 18 Districts in 4 Regions. Stickers for 36/8 and 54/12.

NZR
NEW ZEALAND REGIONS AWARD
by NEW ZEALAND ASSOCIATION OF RADIO TRANSMITTERS INC
Awarded to:
Sample
ZL3XYZ
For making two-way contacts with amateur radio stations in all Regions and Districts
Award No: 001

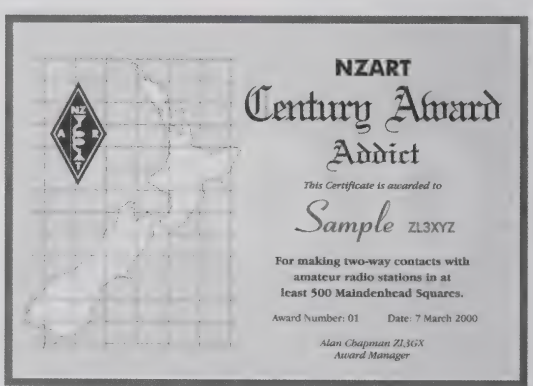
NZART Regions Award Certificate for working all 73 Districts.

NZART Guiding Light Award - Mariners Certificate. Requires a total of 20 points for this certificate.

NZART Guiding Light Award - Master Mariner Certificate. Requires a total of 50 points for this award.


NZART
Century Award
This Certificate is awarded to
Sample ZL3XYZ
For making two-way contact with amateur radio stations in at least 100 Maidenhead Squares.
Award Number: 01
Date: 1 January 2000
Alan Chapman ZL3GX
Award Manager

NZART Century Award for working 100 Maidenhead locator squares within New Zealand.



NZART Century Award, Addict Certificate, for working 500 Maidenhead locator squares within New Zealand.

by
ALAN CHAPMAN
ZL3GX

Award Notes

When applying for an award, whether through NZART or through an overseas Society, courtesy demands that you observe the following: (1) PRINT your name, address and call-sign; (2) Clearly state what award (and endorsements) you are applying for; (3) Supply checking sheet with call-signs, dates of QSOs, mode, etc.; (4) Enclose required funds (currency/IRC/stamps) as requested.

For NZART Awards

1. The usually accepted rules apply to all NZART awards.
2. NZART stresses the HONOUR SYSTEM. Awards applicants need NOT hold QSL cards for claimed contacts. It is sufficient to merely certify that the QSO was legitimately made. This no QSL rule applies ONLY to NZART sponsored awards.
3. Endorsements for mode/time/location etc., made at applicant's request.
4. New Zealand, US or Australian currency accepted instead of IRC but cheques NOT desirable. New Zealand stamps OK $1, $2 or $3 preferred.
5. Post applications to NZART Awards Manager, PO BOX 1733, Christchurch Mail Centre, Christchurch 8140, New Zealand.

APPLICATION FORMS suitable for most awards are available from NZART Awards Manager (SASE Please) or on the web at www.nzart.org.nz/nzart/awards/awards.html.

COST OF AWARDS. NB—Cost given for awards are those for ZL applicants. Overseas applicants pay US$5.00 for each NZART award EXCEPT WAP (US$6.00) or one IRC per $1.00.

For Branch Awards

Logs need not be verified unless stated.

All awards are open to shortwave listeners unless stated.

The honour system also applies to Branch awards.

NZART AWARDS

CJC

Captain James Cook Award

To perpetuate the memory of this world famous navigator and seaman—in three classes: Basic "Sailor Class" requires contacts with—G in Yorkshire; FO; ZL2; VK2; KH6 ... For "Officers Class"—"Sailor Class" contacts as well as ZL1, ZL3, ZL4, VK3, VK4, New Guinea, and any Antarctic station ... For "Command Class", as for "Officer Class" as well as any five of the following—VE2, VO, A35, YJ8, FK8, CE8, KL7.

Certified list (confirmations not required) with $3.00, overseas US$5.00, to NZART Awards Manager.

ENZART

A prestige award to honour NZART

1. In three parts—(A) Basic award requires 200 points with endorsements for 250, 300, 350 points. (B) Honour award requires 400 points with endorsements for each additional 50 points. (C) HONOUR PLAQUE for 500 points.

2. Points earned as follows by contacting an NZART member who is on the voting roll of the Branch concerned—Phone QSO, 1; CW QSO, 2; Club Station QSO, 2; YL op. QSO, 1; UHF, VHF QSO, 1; Mobile QSO, 1; AMSAT QSO, 1; Branch President QSO, 1.

3. It is essential to clearly determine that the operator contacted is a financial member of NZART and on the voting roll of the Branch concerned.

4. Contacts claimed with a Branch Station must be from a Clubroom or other permanent headquarters, or alternatively when the station is being operated in a contest, from an exhibition, or other activity of a similar kind. Contacts as a result of call-sign "swapping" at a member's QTH are not eligible.

5. Contacts with mobiles are eligible only when the mobile station is within 50 km of his Branch's Clubrooms or his own QTH. (Note rule 3 above.)

6. One station may be claimed in several categories—e.g. the Branch President can be claimed for both Phone and for CW as well as for Branch President—but EACH claimed must be for a separate contact, and the contacts must be not less than 24 hours apart.

7. Contacts must be "Phone to Phone" or "CW to CW".

8. "Club Net" contacts are not eligible until the net concludes, while contacts made in an organized "awards net" with MC etc., are not eligible.

9. Permanent changes of QTH by claimant are permitted and likewise contacts made during genuine temporary operation.

10. ZL applicants must be members of NZART and all applicants must certify that each contact made fulfils award requirements. No QSL card need be held or submitted but applications must be made on special Check List—cost 10 cents plus SASE (large). Contacts must date November 1 1976 or later.

11. Each certificate costs $3.00, overseas US$5.00. Endorsements free but SASE required. Overseas US$2.00 Honour Plaque NZ$10.00, overseas US$12.00.

12. Applications to NZART Awards Manager.

IARU Region III Operating Awards

To publicise Region III

1. The award is available to licensed amateurs and SWLs.

2. Contacts made after April 5 1982 are eligible.

3. QSL cards NOT required. Send certified list of eligible contacts from Log Book. Include country in log.

4. Cost is $3.00, overseas US$4.00.

5. Eligible countries are those in Region III whose amateur societies are members of IARU Region III Association. These are: Australia, Bangladesh, Brunei, China (PRC), Chinese Taipei (Taiwan), Fiji, French Polynesia, Hong Kong, India, Indonesia, Japan, Korea, Macau, Malaysia, New Caledonia, New Zealand, Pakistan, Papua New Guinea, Philippines, Pitcairn Island (VR6), Singapore, Solomon Islands, Sri Lanka, Taiwan, Thailand, Tonga, Vanuatu, Vietnam.

PLUS: ONE Country credit from US Territories in the Pacific from Guam, Northern Marianas, American Samoa, Wake Island, Baker Howland Group, as presented by ARRL. Chagos Archipelago (VQ9), represented by RSGB. Current total of available "countries" is 35. Requirements for Award as from January 1 1986: Basic, seven areas; Silver Endorsement, 15 areas; Gold Endorsement, 20 areas. These to be reviewed as considered necessary by the custodian who would recommend appropriately to the Secretariat.

6. Awards may be endorsed for any mode or band.

7. Applications to NZART Awards Manager.

NZART Guiding Light Award

This award requires contacts with stations within 30 km of the more remote lighthouses and 10 km of the lighthouses near cities. Depending on the degree of difficulty each lighthouse has been allocated one to five points. A total of 20 points are required for the basic "Mariners" Award and 50 points for the "Master Mariners" Award.

The lighthouses

North Island	Points	km
Cape Reinga	2	30
Cape Brett	1	30
Mokohinau	5	30
Cuvier Island	3	30
Tiritiri Matangi	1	10
Bean Rock	1	10
East Cape	2	30
Portland Island	2	30
Castlepoint	2	30
Cape Palliser	2	30
Baring Head	1	10
Pencarrow	1	10
Somes Island	1	10
Cape Egmont	1	30

South Island		
Cape Foulwind	1	30
Kahurangi Point	3	30
Farewell Spit	2	30
Boulder Bank	1	10
Stephens Island	5	30
The Brothers	2	30
Cape Campbell	1	30
Godley Head	1	10
Akaroa	1	30
Moeraki	1	30
Taiaroa Heads	1	10
Cape Saunders	1	10
Nugget Point	2	30
Waipapa Point	2	30
Dog Island	1	30
Centre Island	1	30
Puysegur Point	5	30

Full log sheets available from Awards Manager. Eligible contacts for this award must be dated November 1 1998 or later. Cost of both awards $5.00, overseas US$5.00 or five IRC. Applications to NZART Awards Manager.

DOCLands Award

Purpose of Award

To promote the use of Amateur Radio within DOC Controlled Areas. To advertise Amateur Radio from these locations to the public

Date of Award

For contacts on or after January 1 2003

Rules

A station can only be used for one point at each location per trip. If a station is operating from Lake Rotoroa in the Nelson Lakes National Park, from the Sabine Hut, that station must state whether it is a National Park, Forestry Hut or Lake Station. The Transmitting station must be located within the boundaries of:

(1) Forest Park for Forest Park Credit.

(2) National Park for National Park Credit.

(3) within 1 km of a lake, within DOC boundaries for Lake credit.

(4) Within 10 km of a lighthouse within DOC Boundaries for lighthouse credit, while the station itself must be within the boundaries of DOCLands.

(5) Within viewing distance of a DOC Hut within DOC Boundaries for Forest Hut Credit.

(6) On an Island controlled by DOC for Island credit.

A station can claim itself for working stations from a location.

To work stations operating from:	**Basic**	**Intermediate**	**Advanced**
DOC Campsite	2	4	6
National Park	1	2	3
Forest Park	1	3	5
Lighthouse in DOC Control	1	2	3
Lake in DOC Area	1	2	3
Forest Hut	2	4	5
DOC Controlled Land on Islands		1	2

QSL's not required

Lakes: Lakes as per our Lakeside award, but those on DOCLands only

The log sheet includes the rules and a list of lighthouses on DOCLands is available from the NZART Awards Manager and will be available in PDF format on the awards section of the NZART web site.

MIA

Minor Islands Award

For contacts with minor islands of the New Zealand coast—e.g. Kapiti Island, Portland Island, Great Barrier Island, Little Barrier Island, Waiheke Island, D'Urville Island, Rangitoto Island, Kawau Island, Motutapu Island, etc., from which FIVE contacts are required. Certified list with $3.00, overseas US$5.00, to NZART Awards Manager.

1. So-called "islands" which are connected to the mainland by a causeway and rocks are not eligible.

2. The station must be located on the island or within the waters up to one nautical mile offshore, unless prevented by hazardous conditions.

3. Where public access is available, M/M stations must be on a mooring, ie, wharf, jetty, buoy, or anchor, or on arrival or departure from a mooring.

National Parks Award

1. For contacts made with stations operating WITHIN boundaries of a New Zealand National Park.

2. Basic award requires TWO contacts.

3. Usual NZART awards rules apply.

4. Endorsement: for each extra two contacts; for VHF Simplex; for VHF via repeater; for each amateur band; etc.

5. Duplicate Contacts (with SAME station) permitted …

★ on different amateur bands
★ on different days
★ from different Parks.

6. Eligible contacts to date from January 1, 1988.

7. Applications with $3.00, overseas US$5.00, to NZART Awards Manager.

NZ Armed Services Award

This award is presented by the Counties Awards Net to remember all amateur radio operators who have served their country.

This award is open to all amateurs and SWLs.

All contacts made after August 1, 1992 will be eligible for this award.

All Amateur bands and modes may be used.

Repeater contacts accepted.

A station may only be contacted once.

Only one service number may be used.

ZL stations to work 100 contacts. VK stations to work 50 contacts. DX stations to work 30 contacts.

Information required: Log data, Service Number, Service in which served (ie, (A) Army, (AF) Air Force, (N) Navy.

Cost of Award: $3.00, overseas US$5.00.

Custodian: NZART Awards Manager.

Check sheet and rules also available from Awards Manager with SASE.

Provision for Award Update if required.

NZA—New Zealand Award

Available to all radio amateurs other than ZL.

Requirements:

35 contacts with ZL1.

plus 35 contacts with ZL2.

plus 20 contacts with ZL3.

plus 10 contacts with ZL4

plus one contact with ZL "territory"—either from NZ Antarctica, Chatham Islands, Kermadec Islands, or Campbell Island. This one contact may be substituted by 20 ordinary ZL contacts if desired.

This makes a minimum of 101 contacts which should be dated from December 8, 1945. Cost $3.00, overseas US$5.00.

NZC—New Zealand Counties

Basic award required contacts with 20 different New Zealand Counties. Endorsements for 40, 60, 80, 100 are made with a special certificate for 112. Map showing counties is depicted elsewhere in this section, while checking sheet is available from NZART Awards Manager.

1. Initial certificate with any or all endorsements to 100 costs $3.00, overseas US$5.00.

2. Separate endorsements to 100, after issue of basic award, costs 20 cents for any group—or one IRC. Plus SASE.

3. Special Certificate for "NZC 112" costs $3.00, overseas US$5.00.

4. Checking sheets which MUST be used and which are returned to applicant for record purposes cost SASE, overseas US$2.00.

5. NZC "224"—the "224" Shield was instituted to recognize very outstanding achievement—that of "double 112" with different stations contacted in the relevant counties for each NZC 112. Current cost is $15.00, overseas US$25.00 (surface mail only). Applicants for NZC 224 must first hold TWO NZC 112 Awards. Send BOTH log sheets when applying for 224.

6. The operator on a "County DXpedition" whether Mobile or Fixed Portable may claim that County for his own NZC credit.

7. The original "Counties List" will be maintained irrespective of deletions or additions. The criteria will be the actual area of operation which must be determined by the honour of the operator.

NZLA—New Zealand Lakeside Award

1. For Basic Award, contacts are required with stations operating on the shores of TEN (10) freshwater lakes in New Zealand. Endorsements for each additional ten lakes up to 40; Honour Award for 50 lakes with further endorsement for each additional ten.

2. Stations must be located within ONE kilometre of the water or in a town on the lake shore.

3. Full rules are with the Check Sheets which MUST be used when applying for NZLA—these cost a 40 cent stamp plus SASE.

4. Basic Award costs $3.00, overseas US$5.00. Any endorsements SASE, overseas US$2.00.

5. Check Sheets from NZART Awards Manager to whom all applications must be directed.

6. Eligible contacts must date May 1, 1976 or later.

NOTE: Check Sheets are returned to applicant and make up a complete record of lakes credited towards award. Basic work for this award was done for NZART by Mike Groth ZL1AHF.

NZART Century Award

Basic requirements

This award is based on the Maidenhead Locator System. The award is open to all amateurs and SWLs. One hundred different sub-squares are required for the Century Award.

Addict certificate for 500 sub-squares.

Grand certificate for 1000 sub-squares.

Each contact must state the fill six digits of the Locator position, eg, RF66HK.

Eligible contacts must date January 1, 2000 or later.

Any operator on a "Century Award DXpedition" whether mobile or portable may claim the sub-square for their own credit.

Note

All contacts must be from the New Zealand mainland or surrounding islands.

Log sheets and maps, which give a broad outline of the Squares are available. The map supplied does not give an accurate position of the squares. Info maps that have latitude and longitude must be used for the position of the Sub-squares. For example, InfoMap series 242-1, 242-2, 242-3, 242-4, or similar.

A program, written by W4SM, that will return the square for a given latitude and longitude is available via e-mail or send a 3.5" floppy with return postage to the NZART Awards Manager.

Cost

Century and Addict and Grand Certificates NZ, A, US$5.00 each.

NZR Regions Award

This award is similar to the NZ Counties Award but relates to the current Regional Districts.

Basic requirements

Initial certificates with four Regions and 18 Districts.

Stickers for 8/36 and 12/54 Regions and Districts.

Special award for all Regions and Districts.

Contacts must date January 1, 2000 or later.

Cost

Basic award NZ$5.00. Endorsements SASE plus a 40 cent stamp.

Overseas US or A$5.00 or five IRCs. Endorsements $2.00 or two IRCs.

All Regions and Districts Award NZ$5.00, US$5.00 or A$5.00.

Double Region Award $15.00, overseas $25.00 (surface only).

Boundaries

The boundaries are as per InfoMaps 242B-1 to 242B-4 (four maps) and will remain to give a basis of stability.

Applications for the award must be on the log sheets which are available from the NZART Awards Manager. Send SASE or via e-mail (PDF file).

The following is a list of Districts (bold Italic type) and the regions.

North Island Regions

Northland
- Far North
- Whangarei
- Kaipara

Auckland
- Rodney
- North Shore
- Waitakere
- Auckland
- Manukau
- Papakura
- Franklin*

Waikato
- Thames-Coromandel
- Hauraki
- Waikato
- Matamata Piako
- Hamilton
- Waipa
- Otorohanga
- South Waikato
- Waitomo*
- Taupo*

Bay of Plenty
- Western Bay of Plenty
- Tauranga
- Rotorua*
- Kawerau
- Whakatane
- Opotiki

Gisborne
- Gisborne

Hawkes Bay
- Wairoa
- Hastings
- Napier
- Central Hawkes Bay

Taranaki
- New Plymouth
- Stratford
- South Taranaki

Wanganui-Manawatu
- Ruapehu
- Wanganui
- Rangitikei*
- Manawatu
- Palmerston North
- Horowhenua
- Tararua

Wellington
- Masterton
- Carterton
- South Wairarapa
- Kapiti Coast
- Porirua
- Upper Hutt
- Lower Hutt
- Wellington

South Island Regions

Nelson
- Nelson

Marlborough
- Marlborough

Tasman
- Tasman

West Coast
- Buller
- Grey
- Westland

Canterbury
- Kaikoura
- Hurunui
- Selwyn
- Waimakariri
- Christchurch
- Banks Peninsula
- Ashburton
- Mackenzie
- Timaru
- Waimate

Otago
- Waitaki*
- Queenstown-Lakes
- Central Otago
- Dunedin
- Clutha

Southland
- Gore
- Southland
- Invercargill

*Districts cross Regions boundaries.

Tiki Award

Work five different ZLs each on FIVE different bands dated post-war. Cost $3.00, overseas US$5.00.

ZL1 Award

Basic Award requires contacts with 125 different ZL1 stations dating post-war. Endorsements 175 and 250.

ZL2 Award

Basic Award requires contacts with 100 different ZL2 stations dating post-war. Endorsements for 150 and 200.

ZL3 Award

Basic Award requires contacts with 50 different ZL3 stations dating post-war. Endorsements for 75 and 100.

ZL4 Award

Basic Award requires contact with 25 different ZL4 stations dating post-war. Endorsements for 35 and 50.

Note: cost of ZL1/2/3/4 Certificates is $3.00, overseas US$5.00, each with any endorsements. Further endorsements will cost 40 cent stamp plus SASE, overseas US$2.00, UNLESS a new certificate is required instead of "sticker", in which case the cost is as above. On issue, certificates will be endorsed for band/mode as requested and for any yearly period of time (January through December). Such endorsements are of course available to applicants at any time after the initial award has been made. ZL or ZM combination is OK. Applications with list to NZART Awards Manager.

VHFCC—VHF Century Club

One hundred points required from QSOs with ZL stations on the following basis:

50 MHz band contacts count one point.

144 MHz band contacts count three points.

432 MHz band contacts count six points.

(Further bands may be added in the future).

The same station may be claimed once on any one band but may be claimed repeatedly on different bands.

Endorsement stickers available for 200, 300, 400, 500 points. Cost $3.00, overseas US$5.00.

WAD—A VHF Award

Contacts required on any VHF band (or mixture of VHF bands) with ZL1, ZL2, ZL3, ZL4—One contact per Call Area. Cost—$3.00, overseas US$5.00. Endorsements for Satellite QSOs.

WAP—"Worked All Pacific"

Contacts required with 30 different "Oceania Countries".

Eligible countries ... Any Oceania country, i.e. eligible as Oceania for WAC (see DXCC list). Cost $3.00, overseas $6.00. Please include country on log sheet.

Five Band WAP

Contact any 30 eligible Pacific Countries (as counting for Oceania for WAC), each on FIVE different bands making a total of 150.

Send list of log extracts (QSLs not required to be held) to Awards Manager ... with $15.00, overseas US$25.00 surface mail only.

AWARD: Wooden Shield surmounted with NZART badge and suitably inscribed.

WAZL—"Worked All New Zealand"

Contacts required for 45 different Branches of NZART—EXCEPT FOR OVERSEAS APPLICANTS (for whom only 35 are required). Special endorsement when WAZL completed within 12 month period. NB: Mobiles operating outside their own Branch Area must use the Branch Number of the area in which they are operating (for WAZL credit). Cost $3.00, overseas US$5.00 to NZART Awards Manager.

NZART Branches for WAZL

01 Ashburton
02 Auckland
03 Western Suburbs
04 Cambridge
05 Christchurch
06 Tararua
07 Not issues
08 Eastern Southland
09 Egmont (in recess)
10 Franklin
11 Gisborne
12 Hamilton
13 Hastings/Havelock
14 Hawera
15 Central Hawkes Bay
16 Horowhenua
17 Huntly
18 Hutt Valley
19 Inglewood
20 Manawatu
21 Manukau
22 Marlborough
23 Marton and Districts
24 Motueka
25 Napier
26 Nelson
27 New Plymouth
28 Whangarei
29 North Shore
30 Otago
31 Pahiatua (in recess)
32 Rahotu Coastal
33 Rotorua
34 South Canterbury
35 Balclutha
36 South Westland
37 Southland
38 Taumarunui
39 Tauranga
40 Te Awamutu
41 Thames
42 Titahi Bay
43 Waihi and Districts
44 Matamata
45 Waimarino
46 Wairarapa
47 Waitara
48 Wanganui
49 Westland
50 Wellington
51 Eastern Bay of Plenty
52 Northern Hawkes Bay
53 Te Puke
54 Patea
55 Waitomo
56 Christchurch West
57 Tokoroa
58 Helensville (in recess)
59 Mangakino (in recess)
60 Taupo
61 Central Otago
62 Reefton-Buller
63 Upper Hutt
64 North Otago
65 Papakura
66 Auckland VHF
67 Kawerau
68 North Canterbury
69 Kapiti
70 Feilding
71 Rodney
72 Opotiki
73 Northern Wairoa
74 Wellington VHF
75 Queenstown
76 Kaikoura
77 Te Aroha
78 Far North Districts
79 Howick and Districts
80 Hibiscus Coast
81 Waikato
82 Southern Wairarapa
83 Raglan
84 Bay of Islands
85 Mercury Bay

Yearly Award

This award is an annual award starting on January 1 and ending on December 31 each year.

The rules are as follows:

1. A total of 80 contacts required.

2. The numbers of years licensed must be obtained from station worked.

3. The licensed years are totalled to 1000 or more years.

4. Log details must include the operator's call-sign, name, licensed years and date worked.

5. The award is open to all SWLs who must include in addition to the above, both operators names and call-signs.

6. Logs must include at least 20 ZL contacts.

7. Send $3.00, overseas US$5.00, to the NZART Awards Manager.

"5 x 5"—Five by Five

This premier award has been instituted to recognize the increasing interest in Five Band DX operation. The initial award requires that the same station be contacted on five bands repeated with five different DXCC countries. First endorsement after a further five has been contacted (total of 10) with the 20 endorsement requiring another ten and so on to 100. Certified list with full QSO data and fee of $3.00, overseas US$5.00, which includes all endorsements. Certificate is outstanding and is overprinted in embossed gold. Contacts must date from 1945.

ZLA Award

Contacts required with Auckland City, Wellington City, Christchurch City, Dunedin City, Antarctica ZL5, Campbell Island, Chatham Island, Kermadec Island. Applicants must send certified list to NZART Awards Manager with $3.00, overseas US$5.00. Specially produced certificate.

NZART Branch Awards

Aotearoa Postcode Award

This award has been presented to stimulate awareness and the use of postcodes in the New Zealand postal system—at least by the amateur fraternity. To some extent it is a sister award to the Australian Amateur Radio Postcode Club.

1. The award is open to all Amateurs and SWLs.

2. All contacts made on or after October 20, 1991, will be eligible for the award.

3. A certificate will be issued for basic qualification, and stickers for the various following upgrades.

4. Portable and mobile stations must give the postcode for the particular area they are in and can claim that postcode for the award.

5. Basic Award: Make contact with ZL stations and obtain their QTH and Postcode. Then use the suffix letters of the station claimed to complete the following phrase—AOTEAROA LAND OF THE LONG WHITE CLOUD.

Each letter of a call-sign may only be used once unless that station is contacted in a different postcode area. Claim each postcode once only.

6. Upgrades: Stickers will be issued as follows: Postie—100 different postcodes; Mail Officer—150 different postcodes; Supervisor—200 different postcodes; Branch Manager—250 different postcodes. (There is provision for an extension for the enthusiast.)

7. All amateur modes and bands may be used. Repeater contacts accepted.

8. Cost: Basic certificate—

ZL stations	$3.00
VK stations	US$2.00
DX stations	US$3.00

Upgrades—

ZL stations SASE plus $1.00 for first—SASE for other three.

VK Stations SASE plus $1.00 stamp for each upgrade.

DX stations SAE plus US$1.00 for each upgrade.

9. On application send a log with the following: date of contact, station contacted, postcode number, and area to Awards Manager, 48 Leslie Street, Waitara 4320.

As NZ Post revamped the system in July 2006, all old numbers will be accepted for contacts made up to August 31, 2006. From July 1, 2006, the new numbers are acceptable

Bay of Plenty Award—Series 2

Sponsored by the Tauranga Branch 39 of NZART for working stations in the Bay of Plenty region—ie., Opotiki, Rotorua, Tauranga and Whakatane Counties and all cities and districts within this region.

ZLs need either 10 stations on any band or five stations on 50 MHz or higher.

The rest of the world need five stations on any band.

All stations to be in different Maidenhead Locator subsquares, since January 2006.

This award is available to Listeners on a "heard" basis.

Applications with $4.00 (overseas US$5.00) with check-list showing station, date and time, worked mode and band (QSLs not required) to Secretary Tauranga NZART, C/-Emergency Management Office, WBOP District Council, Private Bag 12 803, Tauranga Mail Centre, Tauranga 3143.

Christchurch Award

Requirements

Christchurch amateurs (those within the normal coverage of the 705 repeater) 25 different stations; rest of ZL—15 stations; VK—10 stations; rest of world—five stations. Definition of a Christchurch station that may be worked for this award is any station that is operating from within the metropolitan area of Christchurch. Cost: ZL and VK NZ$5.00; others US$4.00 or equivalent. Applications to Christchurch Amateur Radio Club Awards Manager, PO Box 1733, Christchurch Mail Centre, Christchurch 8140.

Christchurch Amateur Radio Club Branch 05 Brasspounders' Club Award

The aim of this award is to promote Morse technique in a friendly competitive way and to encourage conversational CW between fellow amateur radio enthusiasts.

A Certificate of Accomplishment will be issued by the Christchurch Branch Awards Manager when suitable evidence shows that the applicant has gained the appropriate points total.

For the "INITIAL AWARD" (25 points minimum) the following QSO types are acceptable.

1. CW QSO with Christchurch Amateur Radio Club Branch 05 Club member—one point.

2. CW QSO with Christchurch Amateur Radio Club Branch 05 "Brasspounders" Club member—two points

3. CW QSO with Christchurch Amateur Radio Club Branch 05 "Brasspounders" Club member via ZL3AC Club Station—four points

Bonus points may be added to each of the above according to the following criteria:

4. If the QSO was conducted throughout using a STRAIGHT key, claim two bonus points.

5. If the QSO was conducted throughout using an a ELECTRONIC keyer or SEMI-AUTOMATIC key (bug type) claim one bonus point.

A QSO conducted with COMPUTER Morse will not be eligible for a bonus.

Type "3" QSOs if multiple, must be spaced at least 24 hours.

Award Par Excellente

60 points minimum

For "AWARD PAR EXCELLENTE", New Zealand "Home Stations" must include at least two type "1" QSOs, and there is no points limit on type "5" contacts. Where the same station is being claimed more than once, there must be at least 24 hours separation between the QSOs.

Overseas stations need only one type "1" QSO for their "Award Par Excellente" included with their claim, and may claim two points for each "ZL" QSO together with one extra bonus point if the "ZL" is a "Branch 05 member". At least 24 hours must separate QSOs where the same station is being claimed more than once.

Rules

Frequencies: All Amateur Band CW frequencies may be used.

Who: All Radio Amateurs.

Claims: Log extracts showing date, time on/time off, signal reports, other operator's call and QTH.

Check: Log extracts shall be countersigned by one other similarly licenced amateur operator.

Duration: Contacts claimed shall have been of at least one-quarter hour (15 minute) duration.

Signals: No claims will be accepted with reports of T7 or lower.

When: Only QSOs commenced after the inauguration are acceptable. Inauguration date is February 1, 1993. There is no closing date for claims unless the award termination is promulgated.

Points: Points claimed for "INITIAL AWARD" may not be used for the "AWARD PAR EXCELLENTE".

Costs: NZ$12.00 Initial Award.

The Club Station ZL3AC will be on the air from 0800 UTC on an occasional basis. The operating frequencies are from 3.5 MHz to 3.575 MHz and on other HF bands depending on conditions.

Address all claims to Christchurch Amateur Radio Club Awards Manager, PO Box 1733, Christchurch Mail Centre, Christchurch 8140, New Zealand.

City of Dunedin Award

Otago Branch 30 promotes this award which features colour photographs of Albatrosses in the colony on the Otago Peninsula, the lighthouse at Tairoa Heads, and a view of Dunedin City from Stuart Street.

Contacts since July 1, 1986 eligible and the required 10 points for ZL applications (five point DX) may be accumulated from the following allocations:

ZL4AA Branch station	3 points
Branch 30 President	2 points
Branch Life Member	2 points
Branch YL	2 points
Other Branch members	1 points

Award is open to SWLs.

NO repeater contacts and each station can be worked ONCE only. Any one band/mode or a combination of any bands/modes may be used.

Cost—NZ$2.50 with application to Awards Manager, PO Box 5485, Moray Place, Dunedin 9058.

Fiordland National Park Award

Requirements: Contact four separate stations/operators in or within one kilometre of the Fiordland National Park, plus two contacts with Branch 08 members. Total—six contacts. Send log (no certifying required) with $1.50 (stamps OK) to George McKenzie ZL4JP, Waiparu, No. 7 RD, Gore 9777.

Gisborne Award

Requirements: Contacts after January 1 1969, as follows: Gisborne amateurs—ten different stations. ZL—four stations. Rest of world—two stations.

Cost: $5.00. Apply to Awards Manager, PO Box 1017, Gisborne 4040.

Kapiti Branch Award

1. Ten points required on any band—including VHF-UHF and repeater contacts. Different stations are required.

2. One point for any NZART member residing permanently in the district.

3. Two points for any branch member.

4. Three points for any committee member.

5. Four points for ZL2KB.

6. Net contacts are permitted, except the Branch net.

7. A listeners' award is available. Recording of sufficient two-way contacts worth 10 points.

8. Packet contacts attract two points each for Kapiti Branch member worked direct.

9. Double points for CW contacts, excluding Field Days.

10. No two contacts with the same station are permitted.

11. Price $5.00 per certificate.

12. Enquiries to Award Manager, Kapiti Amateur Radio Club, C/-5a Konin Grove, Raumati Beach 5032.

Kawerau Woodskills Festival Award

This is to run the first two weeks in September each year.

Contacts with Kawerau Branch 67 stations on any band, ie, HF, VHF, UHF.

Rules

Ten points required for ZL applicants (five points for DX stations) may be accumulated as follows:

1. ZL1KW worth five points, Branch President worth three points, any other Branch member one point.

2. Award is available to all Amateur operators or SWLs who accumulate 10 points.

3. The Award application containing a copy of log details or SWLs, name and address plus $5.00 fee to be received by The Awards Manager no later than November 1 each year.

Applications for this Award to the Awards Manager, Branch 67 NZART, C/- Bev Osborne ZL1OS, 34 Cobham Drive, Kawerau 3127, New Zealand.

Manawatu Award

For overseas stations working FIVE stations who are members of Manawatu Branch 20. Certified list and US$3.00 or five IRCs to ZL2AFT, 429 Albert Street, Palmerston North 4410.

Manawatu Amateur Radio Society Windmill Award

The Manawatu Amateur Radio Society Windmill Award is open to all Amateurs and SWLs. To obtain the award stations require seven contacts with Branch 20 members of which one must be a compulsory contact with the Branch Station ZL2KO.

Stations may only be contacted once and must be financial members of Branch 20 at time of contact. All contacts to be made after September 1, 2000.

Overseas stations only need to contact five branch members and the club station is not a compulsory contact for them but optional.

The award is open to all amateurs and SWLers. The cost of the award is NZ$6.00. Overseas US$5.00 for overseas stations.

Please note that this is a separate award to the branch DX award although it is open to DXers.

Applications should be made to:

Award Custodian

Manawatu Amateur Radio Society, PO Box 1718, Palmerston North Central, Palmerston North 4440.

Papakura Radio Club "21" Award

For contacts with 20 members of Papakura Radio Club PLUS ZL1VK dating from January 1 1977. Band/Mode endorsements; certificates not numbered; certified list and $2.00 to Secretary, Papakura Radio Club, PO Box 72-397, Papakura, Manukau 2244.

Railways Award

This Award is sponsored by Southern Wairarapa Branch 82.

To work amateurs within one kilometre of railways stations which are the stopping places for the "Northerner", the "Southerner", and Picton-Christchurch Express (Auckland to Invercargill). Full rules on the check sheet.

Check sheet which contains full rules is available. Send SASE to Railways Awards Custodian, PO Box 1733, Christchurch Mail Centre, Christchurch 8140. Cost of the Award is $3.00.

Reefton-Buller Award

Basic Award requires contact with any five Branch 62 members.

Merit Award requires, in addition to Basic, that ZLs contact one Branch 62 XYL or YL and the Club station ZL3BRC. Overseas stations contact any one of those mentioned above. Two categories HF and VHF.

NO QSLs required. Send certified list with $5.00 to NZART Awards' Manager. List of members etc available from Branch 62 Secretary.

The Rhododendron Festival Award

The award is to beld by the combined clubs of Taranaki branches on or about November each year to coincide with "The Rhododendron Festival". The award certificate will be one of a series of coloured, hand-painted prints of named Rhododendron varieties by the well-known Taranaki artist, Janet

Marshall. Other designs are provided if requested.

Rules

1. The Award will run for two weeks about the beginning of November each year. It is available to all Amateurs and Shortwave Listeners.

2. Contacts may be made on any band, any mode. Each station may be worked *once only* for each separate application for the Award.

3. *New Zealand stations* require 25 points from those listed below:

Compulsory contact with Special Event Station ZL6RFA—five points

Contact with Taranaki Branch stations—three points.
New Plymouth Branch 27—ZL2AB.
Hawera Branch 14—ZL2HAW.
Inglewood Branch—ZL2PT.
Rahotu Coastal Branch 32—ZL2ANN.
Waitara Branch 47—ZL2TO.
South Taranaki Branch 87—ZL2QF.
Each additional Taranaki station (ie, a station whose usual base station is in Taranaki)—one point

4. *Overseas stations* require only six points, calculated as above, and *do not have to make a compulsory contact.*

5. Copy of log, with a note of your Award choice and fee, to arrive before January 31, to:

The Award Custodian
NZART Branch 27
C/- 45 Robe Street
New Plymouth 4310
New Zealand

6. Fees, including return postage:

For ZL award applications $6.00 each.

For all overseas award applications, US$5.00 or fair equivalent.

Main operating frequencies Rhodo Net—3.660 ± MHz, NZ Awards Net—3.677 MHz, and any amateur frequencies.

Rotorua Amateur Radio Club Inc.

Maidenhead Locator Award Rules

1. The name of this award is the Maidenhead RF81 Rotorua Award—in short, The RF81 Award.

2. The Award is the responsibility of Branch 33, Rotorua, NZART.

3. The Award is for contacts into 98 Sub-squares and two contacts with the Club Station ZL1ROT.

4. A certificate will be issued upon completion of contacts into five Sub-squares plus one contact with the Club Station ZL1ROT.

5. Four Endorsements will be issued as the number of Sub-squares contacted reach 25, 50, 75, and 98. They will be known as the Geyser, Redwood, Lakeland, and Mountain Endorsements respectively. The final Endorsement requires a further contact with Club Station ZL1ROT, making a total of 100 contacts for the full award.

6. Contacts may be made on any Amateur band by any mode.

7. Operators working from a Sub-Square may claim that Sub-Square for their own Award.

8. Operators may be contacted before or after the Club Net (see Call Book) on 147.350 MHz. They will also operate on the Awards Net and other frequencies.

9. The masterplan of Sub-Squares will be held by the Award Manager. Copies, together with the Award Rules, will be circulated to the Award Net Controllers. A copy will also be supplied with the Certificate to assist operators to complete the Award.

10. The Sub-Squares identification are:

AL to GL, AM to GM, AN to GN, AO to GO, AP to GP, AQ to GQ, AR to GR, AS to GS, AT to GT, AU to GU, AV to GV, AW to GW, AX to GX, and AA to GA.

11. Claims for Awards are required to show: date, station contacted, band and Sub-Squares worked. SWLs are to quote both stations making contact and only one Sub-Square is to be claimed from each contact logged.

12. The Award commenced on March 25, 1988.

13. The cost of the Award is five only 40 cent stamps (note: only 40 cent stamps please).

14. Endorsements will be forwarded without further charge on receipt of SASE with claim.

15. Claims for this Award and subsequent Endorsements are to be addressed to: The Award Manager, Rotorua Amateur Radio Club Inc, 24 Iles Road, Lynmore, Rotorua 3010, New Zealand.

16. This issue of the Rules of the RF81 Award is effective from May 1 2000.

Southern Polar Plunge Award

This Award sponsored by the Otago Branch NZART Inc, coincides with the longest nights/shortest days of the year and is to highlight the mid-winter activities in the southern parts of New Zealand.

(1) The Award will run in the week of June 21 and contacts with Otago Branch operators on any band or mode are eligible *but* each station may be worked *once* only.

(2) Ten points required for ZL applications (five points for DX stations) may be accumulated from the following allocations:

ZL4AA—Otago Branch Station, three points.

Branch President, two points.

Any other Otago Branch member, one point.

(3) Award is available to any amateur operators for SWLs who accumulate the necessary points.

(4) The Award application containing a copy of log details and operator's or SWL's name and address plus $5.00 fee to be received by—

The Awards Manager
Otago Branch NZART Inc
PO Box 5485
Moray Place, Dunedin 9058
No later than July 31 each year.

Te Puke Amateur Radio Club NZART Branch 53 Visiting Amateur Award

Objects of the Award

To encourage more use of the radio spectrum.

To ensure foreign amateurs visiting ZL are likely to get a two-way contact.

All classes of ZL licence holders ie, novices, technician and general can compete for the award.

Award criteria

Open to all licensed ZL amateurs who are members of NZART.

Basic Award: Ten QSOs with foreign/visiting amateurs.

Advanced Award: Ten QSOs with foreign/visiting amateurs from 10 different countries.

Supreme Award: Fifty QSOs with foreign/visiting amateurs from 50 different countries.

Award rules/conditions

All contacts must be two-way Voice/Phone within the geographical boundaries of ZL on any of the authorized bands in the amateur radio spectrum.

A "country" as defined by the ARRL DXCC Committee and cannot be a deleted one.

When applying for the award a log extract must be submitted showing: call-sign of station worked, date, frequency and country of origin ie, ZL1/K3ZO (USA).

Cost of Award

$5.00.

Cost of upgrades

$2.00.

Award Manager

ZL1IB
Te Puke Amateur Radio Club Inc
C/- PO Box 10 Te Puke 3153.

The Rosetown of New Zealand "Grand Award"

This Award, available in two levels, BASIC ADDICT, is workable world-wide by any Amateur Radio Operator or SWL.

Any mode, any amateur frequency, mixed band usage permitted, and repeater contacts are not barred. Net operation is also permissible.

The object is to contact Grandparent operators, and claim points according to the list given below.

All applicants must be licensed amateur radio operators and their station must be operated in accordance with the Radio Regulations, plus the terms and rules of their own administration. Good operating manners and techniques will be encouraged and only one QSO per call-sign is permitted over the two levels.

Points may be claimed as follows:

A QSO with a Grandparent earns 10 points

who is also a Great-Grandparent earns another 10 points

who is also a Great-Great-Grandparent earns another 20 points

and should there be a Great-Great-Great-Grandparent another 100 points

and each Grandchild, Great-Grandchild, etc, earns 1 points

(For example, two Grandchildren, one Great-Grandchild and two Great-Great-Grandchildren = 5 points plus 40 = 45 sub-total for that QSO.)

The sub-total so claimed, is to be doubled if the operator contacted is a member of the National Radio Society of the country worked: ie, NZART, WIA, ARRL, etc.

The BASIC AWARD of 1000 points (QSL size) $5.00, Overseas US$6.00.

The ADDICT AWARD of 10,000 points (304mm × 203mm) $7.00, Overseas US$6.00.

Basic points can be credited towards the Addict.

Each Award is a beautiful photograph of a rose, and being laminated makes an ideal wall hanging or table placemat. The Award dates from January 1, 1992.

For Log Sheet and Rules, an SASE (or IRC) to: Awards Manager, Te Awamutu ARC, NZART Branch 40, C/- 509/1 Mutu Street, Te Awamutu 3800, New Zealand.

(There is no copyright on photocopying the log or rules.) Applications for the Award to be forwarded with the appropriate remuneration to the above address. Awards by ordinary post.

The Tane Mahuta Award

By Branch 28 with VHF and HF Rules:

1. The HF Tane Mahuta Award for 20 contacts including at least one in the each of the Counties of Rodney, Otamatea, Hobson, Hokianga, Mangonui, Whangaroa, Bay of Islands, and Whangarei with the rules of NZC Award applying.

2. The VHF Tane Mahuta Award for 20 contacts including at least one in each of the Locator Squares RF63, RF 64, RF65, RF74 and that part of RF73 north of 36° 30'; that is, with Sub-Squares ending in M to X. Contacts must be made from one square to another.

3. Portable and Mobile operation is permitted.

4. Multiple contacts are permitted provided the station contacted is located in a different County or Locator Square for each contact.

5. Repeater contacts are permitted if they are made through Northland repeaters at 7100, 7150, 7175, 7200 from outside the Northland area.

6. Contacts on or after January 1, 1985 are eligible.

7. QSL cards are not required. Send certified list of relevant data. BUT for the VHF Award it is necessary to establish the full QTH Locator of the station worked.

8. Applications to Tane Mahuta Award, PO Box 10-078, Te Mai, Whangarei 0143, with cost as within New Zealand NZ$5.00, Australia A$5.00, others US$5.00.

The Travellers Award

This award is sponsored by the Huntly Branch and is to contact stations that are away from their normal residence and camping in a tent, caravan or camper van/mobile home.

There are three camping modes for the award:

1. **Tent.** The portable station must be transmitting from a tent or in a vehicle nearby.

2. **Caravan.** The portable station must be transmitting from a caravan or in a vehicle nearby.

3. **Camper Van/Mobile Home.** The station must be transmitting from within the Camper Van/Mobile Home.

Note: The ham transmitting must be in the camping party.

There are three sections to the award:

Basic

Contact one tent, one caravan, one camper van/mobile home.

Intermediate

Contact Basic plus one tent, one caravan, one camper van/mobile home.

Advanced

Contact Intermediate plus one caravan, one camper van/mobile home.

All contacts after November 1, 2003. The award is open to all amateurs and listeners. Each station may be contacted once only. Contacts valid on HF, VHF, and UHF. No contacts to be made during other events (ie, Jock White Field Day, etc).

Fee for the award is $5.00.

Send log details including date, time, station, frequency and location to: The Awards Manager, C/- J. Williams, Kainui Road, RD1, Taupiri 3791.

Upper Hutt Award

Available to Amateurs and SWLs with any required endorsement for contacts after July 2 1972 with stations operating in Upper Hutt Valley which count as ONE point except YL ops and Club station ZL2VH which count as TWO points. Upper Hutt applicants require a total of 15 points; rest of New Zealand require 10; overseas require five points. Certified list with FULL QSO data (no QSL cards) with $2.00 or one IRC for New Zealand stations, two IRCs for overseas stations. Post to Upper Hutt Award, C/- 35 Matai Road, Raumati South, Kapiti 5032.

Note

Mobile stations operating in the Upper Hutt Valley count as a contact. Upper Hutt Club members outside the Upper Hutt Valley also count as a contact.

The ZL1FND Far North Avocado Festival Award

This is an award that will run in conjunction with the Far North Avocado Festival held late February/early March each year. The award will run during the final week of the festival only.

The award is open to all radio amateurs, including overseas amateurs and SWLs, and can be gained through contacts using 2m, 70cm (including repeaters and the National System) and the HF bands.

Contact confirmation by way of the operator's log will be required and should be received by the contest organizer by the end of April of the current year, together with the fee: New Zealand based operators—$5.00; Overseas—NZ$6.00 equivalent (no (IRCs please). Once the log has been confirmed the certificate will be posted to the claimant.

To gain the award the following points are required:

New Zealand operators: 20.

Overseas operators: 10.

Points can be claimed as follows:

One contact with the Branch ZL1FND operator (compulsory)—five points.

Contact with Branch President or Vice-President (will identify)—four points.

Contact with any Branch 78 committee member (will identify themselves)—three points.

Contact with any other Branch 78 member—two points.

Dates and times (also frequencies for HF) will be notified in the January/February *Break-In* each year.

Claims for the awrd to: The Awards Manager, PO Box 4, Awanui 0451, Far North, New Zealand.

Wairarapa Regional Award

This Award is sponsored by Branches 06, 46 and 82.

Requirements for Award: work eight counties, 12 towns, 15 postcodes, three lakes, four hospitals, eight rivers, two aerodromes, two lighthouses and 23 museums/historic places. The Award can be worked in three stages: basic, upgrade and final.

A check sheet for working the Award is available on written request with SASE, from the Awards Manager, PO Box 860, Masterton 5840.

This Award may be worked on all bands and all modes starting from January 1, 1997. The "Basic" award costs $5.00. "Upgrade" and "Final" stickers are free on receipt of check sheet and SASE.

Waitomo Award

Make 10 points with Branch 55 contacts as follows: VHF Simplex or CW, two points; VHF or UHF Repeater, 1 point; HF Phone, one point; HF CW, two points; VHF Satellite, two points; Club Station ZL1IZ, two points. Award is open to SWLs.

Log details and $5.00 to I. M. Howitt ZL1IZ, 15 Frederick Street, Otorohanga 3900.

Wanganui Award

For contacts since January 1 1982 with permanent residents in the Wanganui area—one point; with Wanganui-based Mobile stations regardless of location—one point; with ZL2JA—two points. Overseas stations require three points; ZLs require five points. (Repeater contacts acceptable.)

QSO details with $3.00 or five IRCs to Award Manager, 1 Caversham Road, Wanganui 4105.

Old Timers' Club

Old Timers' Award

Rules for the Award

Ten contacts with OTC (ZL) members, each contact worth one point, Phone or CW with an upgrade of 50 points.

The information required on each contact is: call-sign, date, time, name and OTC number. Contacts must be on or after launch date December 8, 1995.

Logs with remittance of $5.00 or IRCs to OTC Award Manager, 25 Annandale Street, New Plymouth 4310. Note that points may *not* be gained on the OTC National Net on Sunday mornings.

WARO

New Zealand Women Amateur Radio Operators

NZWARO Award

General

Contacts may be any mode, any band with NZWARO members who are financial at the time of the contact. No QSLs required. Send full log details certifying that the contacts have been made to Award Manager, Lynnette McDonald ZL1LL, 25 John Street, Pukekohe 2120, New Zealand, with sufficient postage for return of award.

HF Section

ZL and VK stations work 10 WARO members resident in New Zealand, DX stations work five. Endorsement seals available to ZL and VK stations for each additional 10 contacts, DX stations five. Contacts with DX members of WARO qualify for endorsements by endorsement application must contain at least three ZL contacts.

VHF/UHF Section

Stations work 10 WARO members on VHF or UHF (repeaters allowed). Endorsements for each additional five.

SWL Section

ZL and VK Listeners list 20 contacts heard with WARO members, DX list 10. Send full log details with call-signs of both stations. Endorsements for each additional 10.

NZWARO Century Award

1. Applications to contain full log details of contacts with 100 NZWARO members (DX members included) dating from June 1, 1987. DX stations may apply for a special DX Award listing 50 contacts only, with endorsements for further 10s until 100 contacts are achieved.

2. Contacts may be any mode, any band, and each member claimed must be a financial member of NZWARO at the time of the contact and may be counted once only.

3. Contacts made on repeaters and in nets will qualify, and WARO contest contacts made after June 1, 1990 will be accepted.

4. No QSLs required. Send list of full log details to Award Manager, Lynnette McDonald ZL1LL, 25 John Street, Pukekohe 2120, New Zealand, with sufficient postage for return of award.

NZWARO Mountain Buttercup Award

1. For contacts with licensed NZWARO members, resident, visiting, mobile, etc, in the 60 towns named in the official list. A WARO member working mobile, portable, etc, may claim the relevant town for her own credit. The same WARO member may be contacted in any number of towns.

2. Basic award is available for list of 15 contacts with endorsement seals for each further 10 contacts up to the full 60 required. Applicants submitting a list of the full 60 valid contacts will receive a special award distinctive from the one gained for the lesser number of contacts.

3. Contacts may be any mode or any band, but each YL worked must be a financial member of NZWARO at the time of the contact and must be within a 25 km radius of the town claimed.

4. Endorsement seals can be claimed for each further 10 contacts (after the basic 60) using the same list of towns. The same WARO members can be worked but each must be in a different town to where previously claimed. Please SAW with applications.

Award dates from January 1, 1989. An official list of towns required to be worked is listed below or is available from the Manager on receipt of an SAE. No QSLs required. Send applications containing full log details including the name of YL and town where worked, together with sufficient postage for return of award, to Award manager, Lynnette McDonald ZL1LL, 25 John Street, Pukekohe 2120, New Zealand.

North Island

1. Auckland
2. Dannevirke
3. Dargaville
4. Eketahuna
5. Featherston
6. Gisborne
7. Hamilton
8. Hawera
9. Helensville
10. Kaikohe
11. Kaitaia
12. Masterton
13. Matamata
14. Morrinsville
15. Napier
16. New Plymouth
17. Opotiki
18. Orewa
19. Otaki
20. Paihia
21. Palmerston North
22. Papakura
23. Putaruru
24. Rotorua
25. Taihape
26. Taumarunui
27. Taupo
28. Tauranga
29. Thames
30. Te Awamutu
31. Te Kuiti
32. Turangi
33. Upper Hutt
34. Waihi
35. Wairoa
36. Wanganui
37. Wellington
38. Wellsford
39. Whakatane
40. Whangarei

South Island

41. Alexandra
42. Ashburton
43. Balclutha
44. Blenheim
45. Christchurch
46. Cromwell
47. Dunedin
48. Gore
49. Greymouth
50. Hokitika
51. Invercargill
52. Kaikoura
53. Motueka
54. Nelson
55. Oamaru
56. Queenstown
57. Reefton
58. Timaru
59. Wanaka
60. Westport

Overseas Awards

Note

1. There are hundreds of awards which are publicised in amateur radio periodicals throughout the world each month! Many are listed in RSGB publication Amateur Radio Awards (priced in UK £1.20) and several publications of DX Awards Guide by Chuck Ellis, priced about $7.00 to $8.00 each! CHC Directory of Awards has been revised and published by NZART member Scott Douglas KB7SB. This is a very comprehensive publication selling for about US$12.50 (check with NZART Awards Manager about these).

2. Most overseas awards can be certified by NZART Awards Manager so the QSLs don't have to be sent overseas BUT, always send a FULL checking list with all QSO data, etc., on which can be written the certification and which can be sent as the application. (ARRL Awards cannot be certified).

3. ALWAYS SEND SUFFICIENT RETURN POSTAGE for QSLs, etc. Print name and address on each sheet of paper used.

A-1 Operator Club

The basic aim of the A-1 Operator Club is to promote good operating in the amateur bands. To become a member one must be nominated by at least two operators who already belong. Every amateur should strive to merit nomination by following standard operating practice, by observing the rules of good Phone operation, and making his CW as clean and accurate as possible. An attractive certificate is awarded to each amateur who qualifies for membership. Note: This award is sponsored by the ARRL. Several ZL amateurs are members. Strive to merit nomination—you never know who may be listening. Similar awards are: TOPS; FOC; HSC.

WAC—Worked All Continents

Issued by IARU only through affiliated Societies. Applications from financial members of NZART only, must be made through the Awards Manager, accompanied by a checking sheet, QSL cards from the six continents, and return stamped envelope.

The following eight certificates are available: Basic (mixed mode), CW, Phone, SSTV, RTTY, FAX, Satellite and 5-band. In addition, the following endorsement stickers are available: QRP, 1.8 MHz, 3.5 MHz, 50 MHz, 144 MHz, any higher frequency band and 6-band. Contacts made on 10/18/24 MHz or via satellite are void for the 5-band certificate and 6-band sticker.

QRP is defined as five watts OUTPUT (10 W input) and QRP contacts must date on or after January 1 1985.

ZL applicants must be NZART members and enclose Break-In label with application.

There is NO charge.

RSGB Awards

For WBC, BCRTA, CDX, etc—SASE to NZART Awards Manager.

French Awards

For information on DDFM, DUF, DTA, DTC, DPE and other French Awards send an SASE to the NZART Awards Manager and include a 40 cent stamp. (Applicants for These Awards can be certified by NZART Awards Manager.)

ARRL Awards

WAS—Worked All States

Obtain the rules and application forms for WAS and 5BWAS by sending a business-size SAE and a few IRC to the ARRL Headquarters, 225 Main Street, Newington, CT 06111, USA.

DXCC—DX Century Club

*See "Countries List" in this *Call Book*.

Many endorsements etc. available—full reprint of rules (4 A4 sheets) from Awards Manager for $1.00.

NORTH ISLAND

NORTH ISLAND COUNTIES

1. Mangonui
2. Whangaroa
3. Holianga
4. Bay of Islands
5. Whangarei
6. Hobson
7. Otamatea
8. Rodney
9. Great Barrier Island
10. Waitemata
11. Franklin
12. Raglan
13. Waikato
14. Waipa
15. Otorohanga
16. Waitomo
17. Taumarunui
18. Coromandel
19. Thames
20. Hauraki Plains
21. Ohinemuri
22. Piako
23. Matamata
24. Tauranga
25. Rotorua
26. Taupo
27. Whakatane
28. Opotiki
29. Waiapu
30. Waikohu
31. Cook
32. Wairoa
33. Hawke's Bay
34. Waipawa
35. Patangata
36. Waipukurau
37. Dannevirke
38. Woodville
39. Clifton
40. Taranaki
41. Inglewood
42. Stratford
43. Egmont
44. Eltham
45. Waimate West
46. Hawera
47. Patea
48. Waimarino
49. Waitotara
50. Wanganui
51. Rangitikei
52. Kiwitea
53. Pohangina
54. Oroua
55. Manawatu
56. Kairanga
57. Horowhenua
58. Hutt
59. Pahiatua
60. Akitio
61. Eketahuna
62. Masterton
63. Waiarapa South
64. Featherston

SOUTH ISLAND

SOUTH ISLAND COUNTIES

65. Marlborough
66. Awatere
67. Kaikoura
68. Golden Bay
69. Waimea
70. Buller
71. Inangahua
72. Grey
73. Westland
74. Amuri
75. Cheviot
76. Waipara
77. Kowai
78. Ashley
79. Rangiora
80. Eyre
81. Oxford
82. Tawera
83. Malvern
84. Paparua
85. Waimairi
86. Heathcote
87. Halswell
88. Mount Herbert
89. Akaroa
90. Chatham Islands
91. Wairewa
92. Ellesmere
93. Ashburton
94. Geraldine
95. Levels
96. Mackenzie
97. Waimate
98. Waitaki
99. Waihemo
100. Waikouaiti
101. Peninsula
102. Taieri
103. Bruce
104. Clutha
105. Tuapeka
106. Maniototo
107. Vincent
108. Lake
109. Southland
110. Wallace
111. Fiord
112. Stewart Island

FIXED LOCATION STATIONS Updated as at 2006.05.18

These listings are based on the MED data base.

Please contact NZART FMTAG for blank copies of the correct forms for making additions, modifications or deletions.

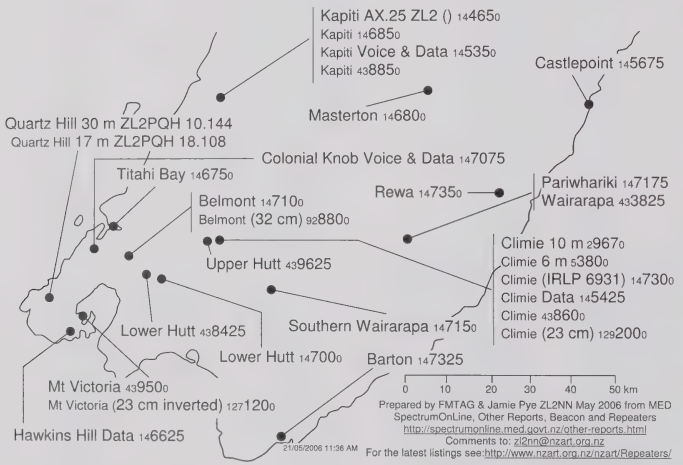
Note on operational status. The following stations are operational, or are expected to become operational during the currency of this Call Book.

Note on repeater input/output offsets. Most repeaters receive LOW and transmit HIGH, except 7025 to 7375 on 2 metres and 434.xxx National System repeaters.

Station Name	Output Frequency	MED Site Name	Map Ref	Branch	Trustee 1	Trustee 2	Note
10 m Repeaters							
User transmits 100 kHz lower. Vertical polarisation.							
Auckland 964	29.640	Laing Road Karaka	R12 743543	86	ZL1BFB	ZL1TRH	
Climie 967	29.670	Mt Climie	R27 898040	63	ZL2TNG	ZL2PDJ	
6 m Repeaters							
User transmits 1 MHz lower. Vertical polarisation.							
Alexandra 3625	53.625	Fruitlands	G42 142336	61	ZL4THT	ZL4GP	
Auckland 3725	53.725	Klondyke	R13 705258	74	ZL1QF	ZL1TN	
Climie 380	53.800	Mt Climie	R27 898040	63	ZL2TNG	ZL2PDJ	
Cass Peak 385	53.850	Cass Peak	M36 797300	CA	ZL3MJS	ZL3TMB	
2 m Repeaters							
Vertical polarisation. User transmits 600 kHz lower for output frequencies of 145.325 to 147.000 MHz. User transmits 600 kHz higher for output frequencies of 147.025 to 147.375 MHz.							
Rotorua Linear 435	144.350	Moerangi	U16 068393	33	ZL1PJ	ZL1BWC	
Kapiti Voice & Data 535	145.350	Mt Field	R26 875374	69	ZL2GO	ZL2HO	
Opunake 540	145.400	Kiri Road	P20 961014	87	ZL2ADU	ZL2BQW	
Brynderwyn 560	145.600	Pilbrow Hill	Q08 383694	28	ZL1DTE	ZL1TVP	
Ward 560	145.600	Weld Cone	P29 072282	22	ZL2BK	ZL2BJV	Linked
Tararua Voice & Data 5625	145.625	Mt Butters	T25 672674	O6	ZL2KG	ZL1AFZ	Linked
Raglan 5675	145.675	Plateau Road	R15 826651	81	ZL1TAT	ZL1THG	
Castlepoint 5675	145.675	Castlepoint	U26 820346	46	ZL2TFZ	ZL2UCW	
Manawatu 5725	145.725	Pahiatua Track	T24 416857	20	ZL2AUB	ZL2FX	
Auckland 5775	145.775	Musick Point	R11 799820	86	ZL1BFB	ZL1TRH	
Auckland 6625	146.625	Klondyke	R13 705258	66	ZL1TGC	ZL1TN	
Timaru 6625	146.625	Mt Horrible	J39 559434	34	ZL3TGR	ZL3AR	
Dunedin 665	146.650	Highcliff	I44 231779	30	ZL4GR	ZL4JH	
Whangarei 665	146.650	Parakiore	Q06 267150	28	ZL1DTE	ZL1TVP	
Wharite 665	146.650	Wharite	T23 529017	O6	ZL2KG	ZL1AFZ	
Hawkes Bay 670	146.700	Kahuranaki	V22 416494	13	ZL2DW	ZL2AJ	
Motueka 670	146.700	Mt Campbell	N27 976092	24	ZL2BCG	ZL2ASF	
Auckland 670	146.700	Ruaotuwhenua	Q11 487742	66	ZL1TGC	ZL1TN	
Oamaru 670	146.700	Station Peak	I40 172034	64	ZL4SN	ZL4DB	
Westport 675	146.750	Cape Foulwind	K29 823386	62	ZL3VC	ZL3SR	
Balclutha 675	146.750	Kuriwao	G46 301348	35	ZL4TL	ZL4AZI	
Bay of Islands 675	146.750	Manginangina	P05 843654	84	ZL2BER	ZL1AVW	
Taupo 675	146.750	Maroanui	U17 735940	60	ZL1BVO	ZL1DT	
Mount Grey 675	146.750	Mt Grey	M34 732872		ZL3UGB	ZL3AIC	
Titahi Bay 675	146.750	Onepoto Res	R27 653093	42	ZL2AUA	ZL2AZ	
Akatere 6775	146.775	Akatere	P04 715881	78	ZL1OT	ZL1AUI	Linked
Taihape 6775	146.775	Mataroa	T21 444641	23	ZL2TRY	ZL2JOE	
Invercargill 680	146.800	Bald Hill	D46 109364	37	ZL4OX	ZL4TFJ	
Tauranga 680	146.800	Cambridge Road	U14 854837	39	ZL1MK	ZL1KL	
Poverty Bay 680	146.800	Kaiti Hill	Y18 477683	11	ZL2UT	ZL2RC	
Tekapo 680	146.800	Mt Rollesby	I38 192691	34	ZL3TGR	ZL3AR	
Nelson 680	146.800	Princes Drive	O27 316919	26	ZL2BCA	ZL2UL	
Masterton 680	146.800	Rangitumau	T26 407366	46	ZL2TFZ	ZL2UCW	
Arowhana 685	146.850	Arowhana	Y16 362316	11	ZL2UT	ZL2RC	
Kapiti 685	146.850	Mt Field	R26 875374	69	ZL2GO	ZL2OH	
Queenstown 685	146.850	Remarkables	F41 794632	75	ZL4JW		Linked
Kaikoura 690	146.900	Kaikoura	O31 673650	76	ZL3PZ	ZL3DR	
Dunedin 690	146.900	Mt Cargill	I44 199855	30	ZL4GR	ZL4JH	
Auckland 690	146.900	Mt Puketutu	R12 899433	66	ZL1ABS	ZL1UET	
Wanganui 690	146.900	Wanganui	R22 855501	48	ZL2BGE	ZL2TDI	
Gisborne 690	146.900	Whakapunake	X18 091532	11	ZL2UT	ZL2RC	
Gore 695	146.950	Mcleods Hill	F45 898550	O8	ZL4AO	ZL4GL	
Waitaki 695	146.950	Mt Studholme	J40 452147	34	ZL3TGR	ZL3AR	
Waikato 695	146.950	Mt Te Aroha	T13 525038	81	ZL1TAT	ZL1THG	
Greymouth 695	146.950	Sewell Peak	K31 736652	49	ZL3TY	ZL3ADH	
Blenheim 695	146.950	The Ned	P28 867510	22	ZL2BK	ZL2BJV	Linked
North Canterbury 6975	146.975	Mt Noble	M33 602152	68	ZL3AI	ZL4WX	Linked
Tairua 6975	146.975	Tairua	T11 608661	85	ZL1AAF	ZL1CWN	
Alexandra 700	147.000	Fruitlands	G42 142336	61	ZL4THT	ZL4GP	
Lower Hutt 700	147.000	Fitzherbert	R27 744968	18	ZL2TVM	ZL2TWS	
Edgecumbe 700	147.000	Putauaki	V16 376374	67	ZL1AIS	ZL1CAY	
Murchison 7025	147.025	Mt Murchison	M29 683418	26	ZL2BCA	ZL2UL	
Christchurch 705	147.050	Marleys Hill	M36 804330	O5	ZL3VP	ZL3RX	

Station Name	Output Frequency	MED Site Name	Map Ref	Branch	Trustee 1	Trustee 2	Note
Egmont 705	147.050	Mt Egmont	P20 053104	87	ZL2AFE	ZL2WJM	
Colonial Knob Voice & Data	147.075	Colonial Knob	R27 613043	74	ZL3TC	ZL2TFZ	
Far North 710	147.100	Maungataureia	O04 542702	78	ZL1BG	ZL1FC	Linked
Belmont 710	147.100	Belmont	R27 669016	74	ZL2ARW	ZL2TFZ	
Manawatu 7125	147.125	Pahiatua Track	T24 416857	20	ZL2AUB	ZL2FX	
Far North 715	147.150	Browns Hill	P05 882484	78	ZL1AUI	ZL1BQK	
Westport 715	147.150	Mt Frederick	L29 140440	62	ZL3VC	ZL3SR	
Taumarunui 715	147.150	Hikurangi	S18 099654	38	ZL1AO	ZL1UTH	
Southern Wairarapa 715	147.150	The Knoll	S27 126004	82	ZL2SJ	ZL2BLM	
Pariwhariki 7175	147.175	Pariwhariki Trig	T27 389077	46	ZL2TFZ	ZL2UCW	
Te Puke 7175	147.175	Shaw Road	U15 972630	53	ZL1RAB	ZL1TAJ	
Eyrewell 720	147.200	Eyrewell	M35 552533	CA	ZL3MJS	ZL3TMB	
Whangarei 720	147.200	Parakiore	Q06 267150	28	ZL1DTE	ZL1TVP	
New Plymouth 720	147.200	Power Station	P19 990382	27	ZL2BR	ZL2BZH	
Nelson 720	147.200	Saddle Hill	O27 462923	26	ZL2BCA	ZL2UL	
Picton 7225	147.225	Mt Freeth	P27 924903	22	ZL2BK	ZL2BJV	Linked
Doubtless Bay 7225	147.225	Rangiawhia	O03 466037	78	ZL1AUI	ZL1BQK	
Waipuna Road 7225	147.225	Waipuna Road	R16 846159	55	ZL1HJ	ZL4SQ	
Canterbury 725	147.250	Herbert Peak	M36 892243	O5	ZL3VP	ZL3RX	
Whangarei 725	147.250	Horokaka	Q07 132917	28	ZL1DTE	ZL1TVP	
Napier 725	147.250	Taraponui	V19 333234	25	ZL2DW	ZL2TC	
Kakaramea 7275	147.275	Kakaramea	T19 437441	38	ZL1AO	ZL1UTH	
Climie 730	147.300	Climie	S27 901048	63	ZL2TNG	ZL2PDJ	
Rodney 730	147.300	Moir Hill	R09 539245	71	ZL2BCB	ZL1BKD	
Whakatane 730	147.300	Whakatane	W15 629502	51	ZL1BCW	ZL1NI	
Barton 7325	147.325	Barton	S28 052586	46	ZL2TFZ	ZL2UCW	
Ponga 7325	147.325	Ponga Hill	R12 886529	86	ZL1BFB	ZL1TRH	
Rotorua 735	147.350	Moerangi	U16 004306	33	ZL1PJ	ZL1BWC	
Rewa 735	147.350	Mt Rewa	T27 628081	46	ZL2TFZ	ZL2UCW	
Waitomo 7375	147.375	Rangitoto	S16 212126	55	ZL1BZ	ZL1HJ	
Golden Bay	147.375	Takaka Hill	N26 983203	24	ZL2BCG	ZL2ASF	

Wellington & Wairarapa Amateur Radio 10 m, 6 m, 2 m, 70 cm, 32 cm & 23 cm Repeaters



Naming of Repeaters and Beacons

The repeaters name is split into two parts: The name (this is normally named after the repeater's location) and the frequency of transmission. The frequency is also split into two parts: an abbreviated version and the full transmit frequency in kHz.

Repeater name (bold)
Masterton 146800
Transmit frequency in kHz

NOTE: If the kHz digit is a zero it is not shown as part of the repeater name

Repeater Offsets (Splits)

Band	Repeater receives on a frequency of (kHz)
10 m	Lower by 100 kHz
6 m	Lower by 1 000 kHz
2 m	Lower by 600 kHz Higher by 600 kHz for repeater transmit 147 025 to 147 375
70 cm	Lower by 5 000 kHz Higher by 5 000 kHz for repeater transmit 433 250 to 434 975
32 cm	Lower by 7 600 kHz
23 cm	Lower by 20 000 kHz

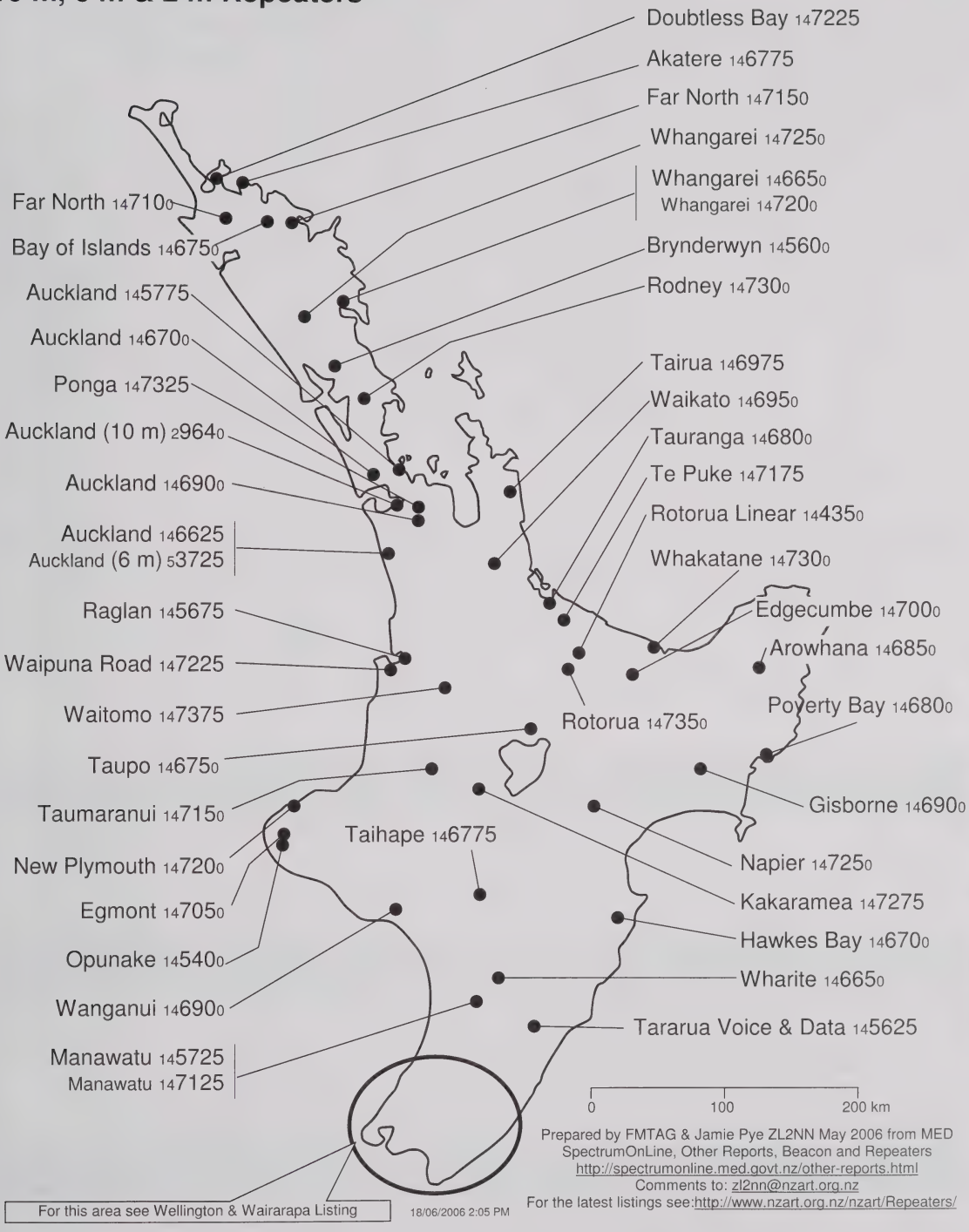
Internet Radio Inking Project (IRLP)

NOTE: Tables show stations that appear in these maps

IRLP Nodes @ 21 April 2006 from http://www.irlp.net/				
ID	Callsign	City	Frequency	Status
6285	ZL2KS	Blenheim	-146.9500	IDLE
6549	ZL1IS	Waikato	-146.9500	IDLE
6793	ZL2AS	Hastings	+147.2500	Down

IRLP Nodes @ 21April 2006 from http://www.irlp.net/				
ID	Callsign	City	Frequency	Status
6900	ZL3TMB	Christchurch	+147.2000	Down
6931	ZL2VH	Upper Hutt	-147.3000	IDLE
6943	ZL2KO	Manawatu	-145.7250	IDLE

North Island Amateur Radio
10 m, 6 m & 2 m Repeaters



Prepared by FMTAG & Jamie Pye ZL2NN May 2006 from MED SpectrumOnLine, Other Reports, Beacon and Repeaters
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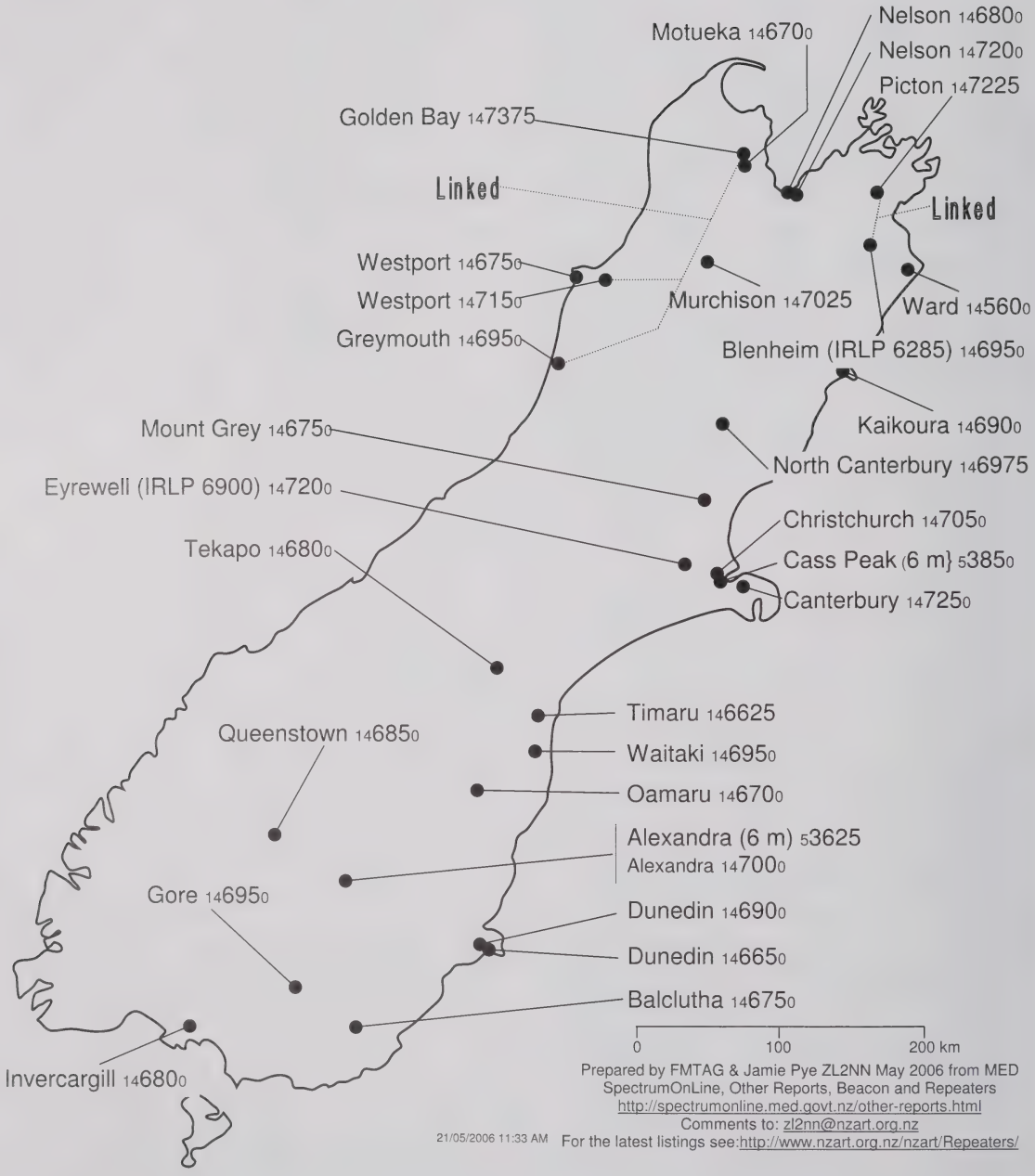
South Island Amateur Radio 10 m, 6 m & 2 m Repeaters



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70 cm REPEATERS

User transmits 5 MHz lower for 438.xxx and 439.xxx. User transmits 5 MHz higher for 433.xxx and 434.xxx. Vertical polarisation. National System repeaters are listed on another page.

Station Name	Output Frequency	MED Site Name	Map Ref	Branch	Trustee 1	Trustee 2	Note
Wairarapa 3825	433.825	Pariwhariki	T27 389077	46	ZL2TFZ	ZL2UCW	
Mosgiel 820	438.200	Saddle Hill	I44 055746	30	ZL4GR	ZL4JH	Simplex
Ponga 825	438.250	Ponga Hill	R12 886529	86	ZL1BFB	ZL1TRH	
Dunedin 830	438.300	Highcliff	I44 231779	30	ZL4GR	ZL4JH	Simplex
Eyrewell 835	438.350	Eyrewell	M35 552533	CA	ZL3MJS	ZL3TMB	
Christchurch 840	438.400	Marleys Hill	M36 805328	CA	ZL3MJS	ZL3TMB	
Waikato 840	438.400	Te Aroha	T13 526039	81	ZL1TAT	ZL1THG	
Lower Hutt 8425	438.425	Birch Street	R27 711976	18	ZL2TVM	ZL2TWS	
Taraponui 8425	438.425	Taraponui	V19 333234	25	ZL2DW	ZL2TC	
Auckland 845	438.450	Klondyke	R13 705258	66	ZL1TGC	ZL1TN	
Blenheim 845	438.450	Tuamarina	P28 884780	22	ZL2BK	ZL2BJV	
New Plymouth 8475	438.475	Carrington Road	P19 995240	27	ZL2BR	ZL2BZH	
Auckland 850	438.500	Auckland	R11 677815	66	ZL1ABS	ZL1UET	
Cass Peak 850	438.500	Cass Peak	M36 797300	56	ZL3ACS	ZL3VI	
Manawatu 8525	438.525	Pahiatua Track	T24 416857	20	ZL2AUB	ZL2FX	
Westport 855	438.550	Mt Frederick	L29 140440	62	ZL3VC	ZL3SR	
Te Puke 855	438.550	Te Puke	U15 972630	53	ZL1RAB	ZL1TAJ	
Manurewa 8575	438.575	Manurewa	R11 805664	86	ZL1BFB	ZL1TRH	
Greymouth 8575	438.575	Sewell Peak	K31 736652	49	ZL3TY	ZL3ADH	
Hunua 860	438.600	Gillespie Road	S12 909538	65	ZL1BNQ	ZL1AVR	
Climie 860	438.600	Mt Climie	S27 901048	63	ZL2TNG	ZL2PDJ	
Oamaru 865	438.650	Cape Wanbrow	J41 504639	64	ZL4SN	ZL4DB	
Taihape 865	438.650	Cleavers Hill	T21 455828	23	ZL2TRY	ZL2JOE	
Invercargill 870	438.700	Invercargill	E46 532122	37	ZL4OX	ZL4TFJ	
Whangarei 870	438.700	Parahaki	Q07 318089	28	ZL1DTE	ZL1TVP	
Waitomo 870	438.700	Rangitoto	S16 212126	55	ZL1BZ	ZL1HJ	
Hawkes Bay 870	438.700	Te Mata	V21 448603	13	ZL2DW	ZL2AJ	
Egmont 880	438.800	Mt Egmont	P20 053104	87	ZL2AFE	ZL2WJM	
Kapiti 885	438.850	Mt Field	R26 875374	69	ZL2GO	ZL2OH	
Tauranga 885	438.850	Papamoa	U14 994798	39	ZL1VA	ZL1MK	
Nelson 890	438.900	Fringed Hill	O27 366885	26	ZL2BCA	ZL2UL	
Dunedin 915	439.150	Mt Cargill	I44 199855	30	ZL4GR	ZL4JH	
Hawkes Bay 9175	439.175	Te Mata	V21 447602	13	ZL2DW	ZL2AJ	
Mt Victoria 950	439.500	Mt Victoria	R27 604886	74	ZL3TC	ZL2TAR	
Gisborne 950	439.500	Te Kapua	Y17 341903	11	ZL2UT	ZL2RC	
Whangarei 9575	439.575	Horokaka	Q07 132917	28	ZL1DTE	ZL1TVP	
Wharite Voice & Data 960	439.600	Wharite	T23 531016	O6	ZL2KG	ZL1AFZ	
Upper Hutt 9625	439.625	Akatarawa	R26 890135	63	ZL2TNG	ZL2PDJ	
Hawkes Bay Voice & Data 9675	439.675	Mt Threave	V22 341547	25	ZL2DW	ZL2TC	
Whakatane 9725	439.725	Whakatane	W15 629502	51	ZL1BCW	ZL1NI	

32 cm REPEATERS

Users transmit 7.6 MHz lower. Vertical polarisation.

Belmont 880	928.800	Mt Belmont	R27 669016	74	ZL3TC	ZL4JY

23 cm REPEATERS

User transmits 20 MHz lower. Vertical polarisation

Mount Victoria 120	1271.200	Mt Victoria	R27 604886	74	ZL3TC	ZL2TAR
Auckland 190	1291.900	Glenfield	R11 642880	66	ZL1TGC	ZL1ABS
Climie 200	1292.000	Mt Climie	R27 898040	63	ZL2TNG	ZL2PDJ

VOIP (ECHOLINK & IRLP)

Simplex.

Station Name	Output Frequency	MED Site Name	Map Ref	Branch Number	Trustee 1	Trustee 2
Tauranga Echolink	432.700	Tauranga	U14 917815		ZL1CYK	

APRS, BULLETIN BOARDS & DIGIPEATERS

Simplex

Station Name	Frequency	MED Site Name	Map Ref	Branch	Trustee 1	Trustee 2	Note
ZL2PQH	10.144	Quartz Hill	R27 517938	50			
ZL2PQH	18.108	Quartz Hill	R27 517938	50			
Christchurch	144.575	Marleys Hill	M36 801332	O5	ZL3VP	ZL3RX	
Timaru	144.575	Mt Horrible	J39 559434	34	ZL3TGR	ZL3AR	
Western Suburbs	144.575	Whau Bridge	R11 612753	O3	ZL1MW	ZL1VRR	
Whitford Aprs	144.575	Whitford	R11 898705	66	ZL1TN	ZL1QF	
ZL1TEP	144.625	Te Puke	U14 975764	53	ZL1RAB	ZL1TAJ	
North Shore	144.650	Castor Bay	R10 684921	29	ZL1BNY	ZL1AUW	
ZL2SUN	144.650	Fringed Hill	O27 364885	26	ZL2BCA	ZL2UL	
ZL4AAI	144.650	Highcliff	I44 231779	30	ZL4GR	ZL4JH	
Dunedin BBS	144.650	Clubrooms	I44 158759	30	ZL4GR	ZL4JH	
New Plymouth	144.650	Hurford Road	P19 995264	27	ZL2BR	ZL2BZH	
Napier	144.650	Kahuranaki	V22 416494	25	ZL2TC	ZL2AJ	
Kaikoura	144.650	Kaikoura	O31 676646	76	ZL3PZ	ZL3DR	
ZL3CHC	144.650	Marleys Hill	M36 804330	O5	ZL3VP	ZL3RX	
ZL4ALI	144.650	Millane Road	F45 014479	O8	ZL4AO	ZL4GL	
Climie	144.650	Mt Climie	R27 898040	63	ZL2TNG	ZL2PDJ	
Kapiti	144.650	Mt Field	R26 875374	69	ZL2GO	ZL2OH	
Westport	144.650	Mt Frederick	L29 140440	62	ZL3VC	ZL3SR	
Murchison	144.650	Mt Murchison	M29 683418	49	ZL3TY	ZL3ADH	
Timaru	144.650	Mt Studholme	J40 452147	34	ZL3TGR	ZL3AR	
Greymouth	144.650	Paparoa	K31 736655	49	ZL3TY	ZL3ADH	
Waitomo	144.650	Rangitoto	S16 212126	81	ZL1BZ	ZL1HJ	
Queenstown	144.650	Remarkables	F41 794632	75	ZL4JW		
Nelson	144.650	Takaka Hill	N26 983206	26	ZL2BCA	ZL2UL	
Gisborne	144.650	Whakapunake	X18 091532	11	ZL2UT	ZL2RC	
ZL2SUM	147.500	Fringed Hill	O27 364885	26	ZL2BCA	ZL2UL	
Whitford APRS	432.575	Whitford	R11 898705	66	ZL1TN	ZL1QF	

DATA (AND VOICE) REPEATERS

Duplex with normal input/output frequency split. Vertical polarisation.

Station Name	Output Frequency	MED Site Name	Map Ref	Branch Number	Trustee 1	Trustee 2	
Kapiti Voice & Data 535	145.350	Mt Field	R26 875374	69	ZL2GO	ZL2OH	
Kaimai Data 540	145.400	Takaurunga	T15 684649	81	ZL1GWP	ZL3GR	
Climie Data 5425	145.425	Mt Climie	R27 898040	69	ZL2TNG	ZL2PDJ	
Auckland Node 5625	145.625	Klondyke	R13 705258	66	ZL1TGC	ZL1TN	
Tararua Voice & Data 5625	145.625	Mt Butters	T25 672674	O6	ZL2KG	ZL1AFZ	Linked
Hawkins Hill Data 6625	146.625	Hawkins Hill	R27 550854	74	ZL3TC	ZL2AOC	
Colonial Knob Voice & Data 7075	147.075	Colonial Knob	R27 613043	74	ZL3TC	ZL2TFZ	
Eyrewell Data 7125	147.125	Eyrewell	M35 552533	CA	ZL3MJS	ZL3TMB	
Eyrewell Data 835	438.350	Eyrewell	M35 552533	CA	ZL3MJS	ZL3TMB	
Wharite Voice & Data 960	439.600	Wharite	T23 531016	O6	ZL2KG	ZL1AFZ	Linked
Hawkes Bay Voice & Data 9675	439.675	Mt Threave	V22 341547	25	ZL2DW	ZL2TC	

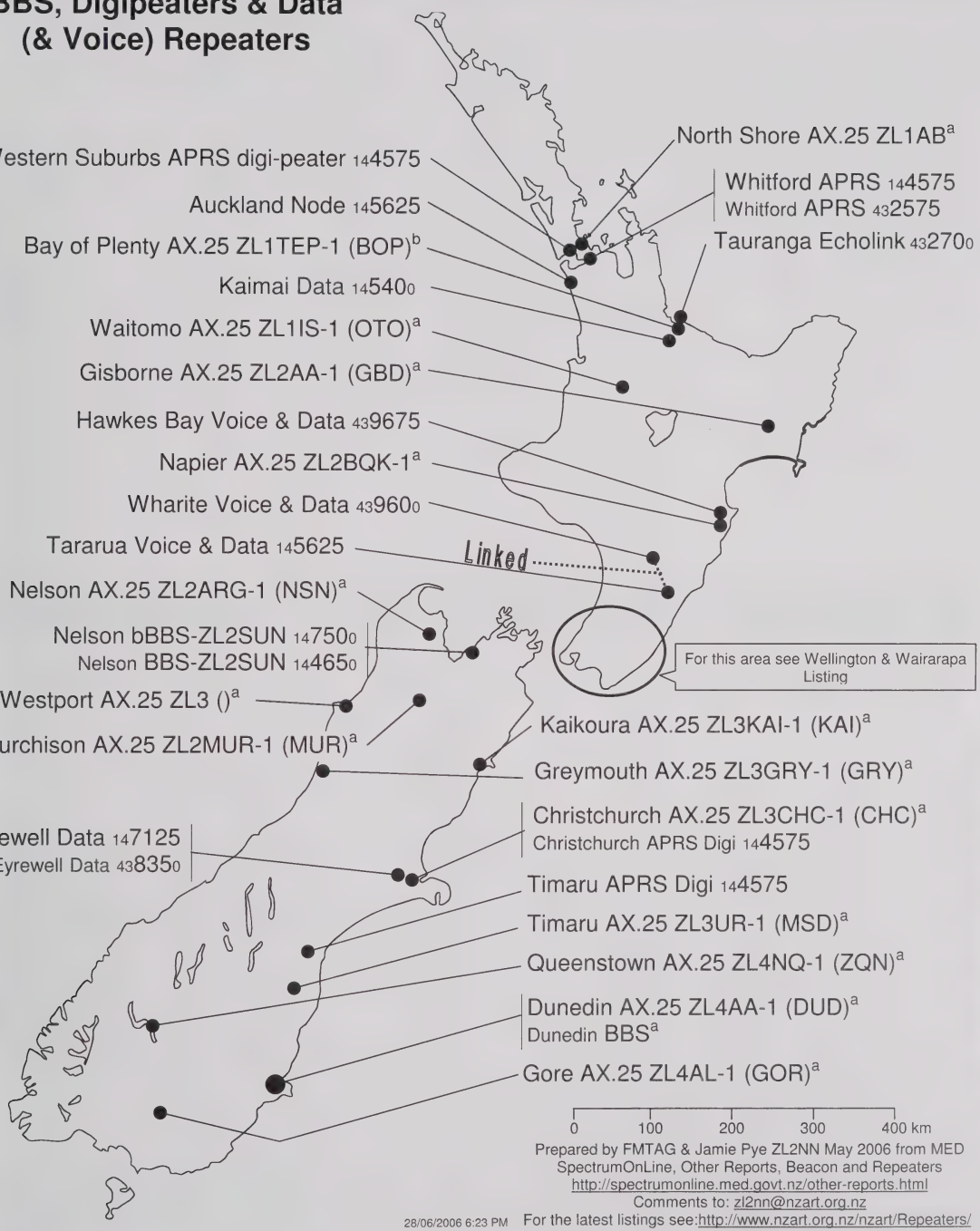
AMATEUR TELEVISION REPEATERS

In general, the 615.250 MHz repeaters have inputs of 431.250 MHz, and/or 1248 MHz and/or 1282 MHz. In general 431.25 MHz, 1248 MHz and 1282 MHz inputs have Horizontal polarisation. 615.25 MHz outputs have the same polarisation as local UHF broadcasts, either Horizontal (H) or Vertical (V).

Station Name	Vision Output Frequency	Polarisation	MED Site Name	Map Ref	Branch Number	Trustee 1	Trustee 2
Ngaio Atv	431.250	H	Ngaio Reservoir	R27 594933	74	ZL2HD	ZL2TAR
Ngaio Atv	922.250	H	Ngaio Reservoir	R27 594933	74	ZL2HD	ZL2TAR
Oamaru Atv	615.250	V	Cape Wanbrow	J41 504639	64	ZL4SN	ZL4DB
Christchurch Atv	615.250	H	Christchurch	M36 806363	O5	ZL3VP	ZL3RX
Hamilton Atv	615.250	H	Hamilton	S14 082776	12	ZL1IC	ZL1PK
Hawkes Bay Atv	615.250	V	Latham St	V21 454813	25	ZL2TC	ZL2AJ
Belmont Atv	615.250	H	Mt Belmont	R27 669016	74	ZL2ARW	ZL2TAR
Dunedin Atv	615.250	H	Mt Cargill	I44 199855	30	ZL4GR	ZL4JH
Auckland Atv	615.250	H	Nihotupu	R11 506732	66	ZL1QF	ZL1ABS
Tasman Bay Atv	615.250	V	Takaka Hill	N26 983203	24	ZL2ASF	ZL2VBO
Gisborne Atv	615.250	H	Wheatstone Road	Y18 510683	11	ZL2UT	ZL2RC
Blenheim Atv	615.250	H	Wither Hills	P28 921619	22	ZL2BK	ZL2BJV
Whangarei Atv	615.250	V	Parahaki	Q07 318089	28	ZL1DTE	ZL1TVP
Whitford Atv	1248.000	H	Whitford	R11 898705	66	ZL1QF	ZL1ABS
Oamaru Atv	1282.000	V	Cape Wanbrow	J41 504639	64	ZL4SN	ZL4DB

New Zealand Amateur Radio BBS, Digipeaters & Data (& Voice) Repeaters

a = Operating frequency 144.650 MHz simplex
b = Operating frequency 144.625 MHz simplex



Prepared by FMTAG & Jamie Pye ZL2NN May 2006 from MED SpectrumOnLine, Other Reports, Beacon and Repeaters
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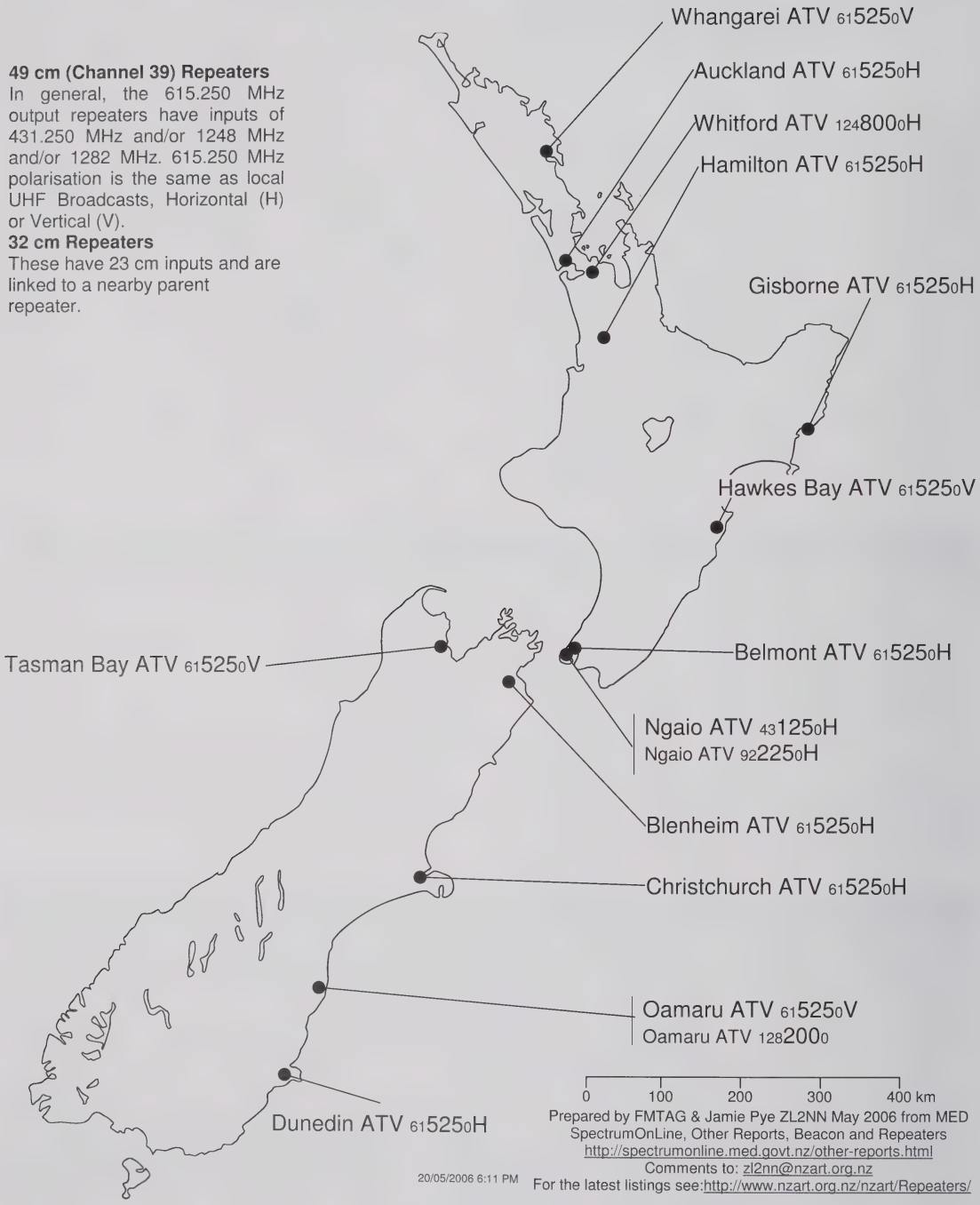
New Zealand Amateur Radio ATV Repeaters

49 cm (Channel 39) Repeaters
In general, the 615.250 MHz output repeaters have inputs of 431.250 MHz and/or 1248 MHz and/or 1282 MHz. 615.250 MHz polarisation is the same as local UHF Broadcasts, Horizontal (H) or Vertical (V).

32 cm Repeaters
These have 23 cm inputs and are linked to a nearby parent repeater.



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20/05/2006 6:11 PM

NATIONAL SYSTEM REPEATERS

User transmits 5 MHz high for repeater with an output frequency of 434.xxx MHz User transmits 5 MHz low for repeater with an output frequency of 439.xxx MHz

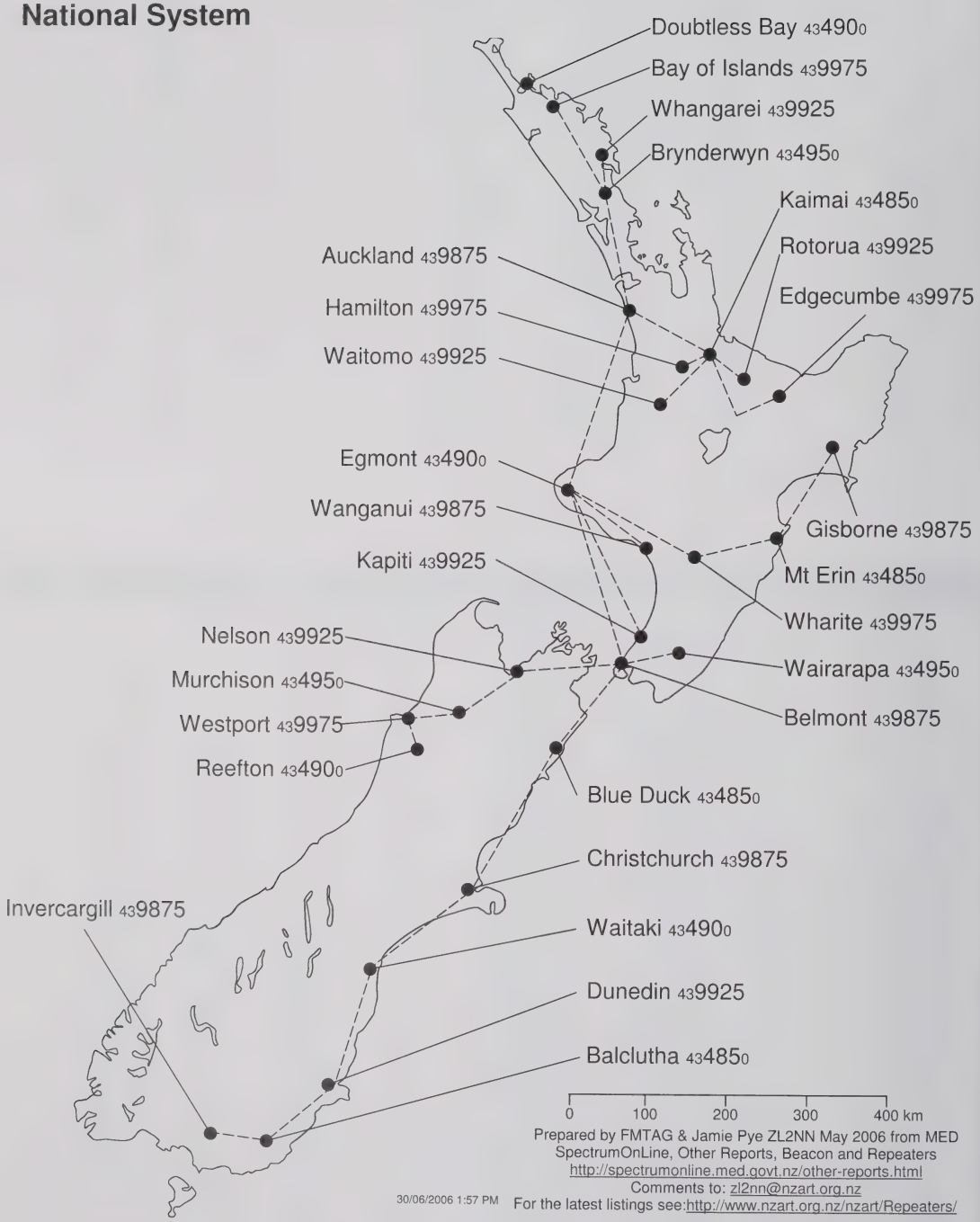
Station Name	Output Frequency	MED Site Name	Map Ref	Branch Number	Trustee 1	Trustee 2	Note
Blue Duck 485	434.850	Blue Duck	P31 753892	05	ZL3VP	ZL3RX	
Mt Erin 485	434.850	Mt Erin	V22 391556	25	ZL2DW	ZL2TC	
Balclutha 485	434.850	Mt Stuart	H45 601541	33	ZL4QS	ZL4TL	C
Kaimai 485	434.850	Takaurunga	T15 685649	81	ZL1GWP	ZL3GR	
Egmont 490	434.900	Mt Egmont	P20 036122	74	ZL2KG	ZL2ARW	
Waitaki 490	434.900	Mt Studholme	J40 452147	34	ZL3TGR	ZL3AR	
Doubtless Bay 490	434.900	Rangiawhia	O03 466037	78	ZL1AUI	ZL1BQK	
Reefton 490	434.900	Reefton	L30 180977	62	ZL3VC	ZL2BCP	C
Murchison 495	434.950	Mt Murchison	M29 683418	26	ZL2BCA	ZL2UL	
Wairarapa 495	434.950	Pariwhariki	T27 389077	46	ZL2TFZ	ZL2UCW	C
Brynderwyn 495	434.950	Pilbrow Hill	Q08 383694	28	ZL1DTE	ZL1TVP	
Southland 9875	439.875	Hedgehope	F45 783485	08	ZL4AO	ZL4GL	C
Auckland 9875	439.875	Klondyke	R13 705258	66	ZL1TGC	ZL1TN	
Wanganui 9875	439.875	Landguard	R22 830367	48	ZL1BNB	ZL2KR	C
Christchurch 9875	439.875	Marleys Hill	M36 804330	05	ZL3VP	ZL3RX	
Belmont 9875	439.875	Mt Belmont	R27 669016	74	ZL2ARW	ZL2TFZ	
Gisborne 9875	439.875	Whakapunake	X18 091532	11	ZL2UT	ZL2RC	C
Nelson 9925	439.925	Fringed Hill	O27 366886	28	ZL2BCA	ZL2UL	
Dunedin 9925	439.925	Mt Cargill	I44 199855	30	ZL4GR	ZL4JH	
Kapiti 9925	439.925	Mt Field	R26 875374	69	ZL2GO	ZL2OH	
Whangarei 9925	439.925	Parahaki	Q07 318089	28	ZL1DTE	ZL1TVP	
Waitomo 9925	439.925	Rangitoto	S16 212126	55	ZL1BZ	ZL1HJ	
Rotorua 9925	439.925	Whakapoungakau	U16 080399	33	ZL1PJ	ZL1BWC	
Hamilton 9975	439.975	Hamilton	S14 129719	81	ZL1TAT	ZL1THG	
Bay Of Islands 9975	439.975	Manginangina	P05 843654	84	ZL2BER	ZL1AVW	
Edgecumbe 9975	439.975	Mt Edgecumbe	V16 378374	67	ZL1CAY	ZL1AIS	
Westport 9975	439.975	Mt Rochfort	K29 053357	62	ZL3VC	ZL2BCP	
Wharite 9975	439.975	Wharite	T23 529016	06	ZL2KG	ZL1AFZ	

Notes: C = under construction.

AMATEUR RADIO BEACONS

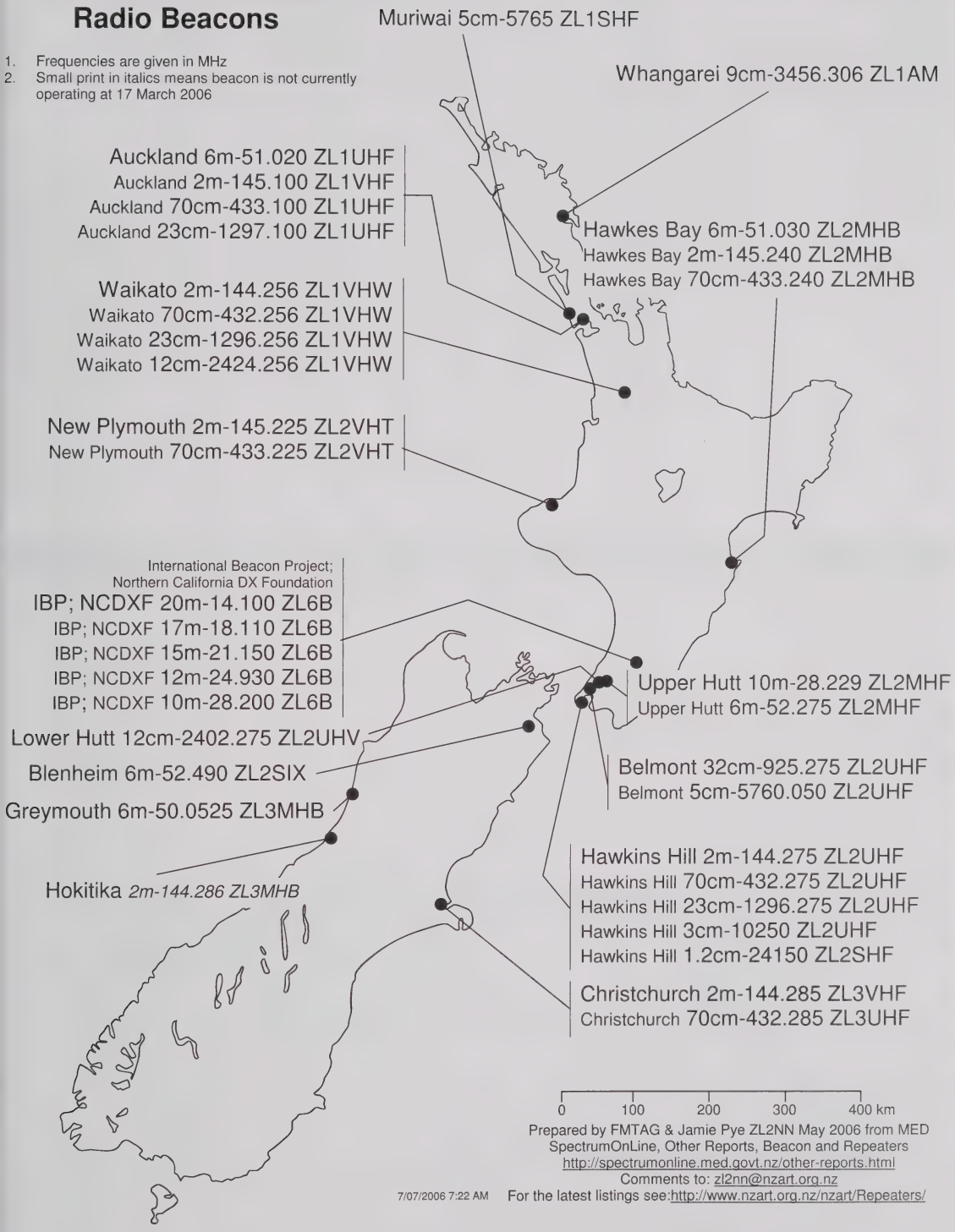
Station Name	Output Frequency	MED Site Name	Map Ref	Branch Number	Trustee 1	Trustee 2	Callsign	Note
IBP; NCDX	14.100	Gladstone Road	S26 281149	46	ZL2FC		ZL6B	
IBP; NCDX	18.110	Gladstone Road	S26 281149	46	ZL2FC		ZL6B	
IBP; NCDX	21.150	Gladstone Road	S26 281149	46	ZL2FC		ZL6B	
IBP; NCDX	24.930	Gladstone Road	S26 281149	46	ZL2FC		ZL6B	
IBP; NCDX	28.200	Gladstone Road	S26 281149	46	ZL2FC		ZL6B	
Upper Hutt 10 m	28.229	Mt Climie	R27 898040	63	ZL2TNG	ZL2PDJ	ZL2MHF	
New Plymouth 6 m	50.045	Otaraoa Road	Q19 233368	27	ZL2BR	ZL2BZH	ZL2VHT	
Greymouth 6 m	50.053	Greymouth	J31 632602	49	ZL3TY	ZL3ADH	ZL3MHB	
Auckland 6 m	51.020	Nihotupu	R11 506732	66	ZL1QF	ZL1TN	ZL1UHF	
Hawkes Bay 6 m	51.030	Latham St	V21 454813	13	ZL2DW	ZL2TC	ZL2MHB	
Upper Hutt 6 m	52.275	Mt Climie	R27 898040	63	ZL2TNG	ZL2PDJ	ZL2MHF	
Blenheim 6 m	52.490	Wither Hills	P28 921616	22	ZL2BK	ZL2BJV	ZL2SIX	
Waikato 2 m	144.256	Hamilton City	S14 108781	81	ZL1THG	ZL1TAT	ZL1VHW	
Hawkins Hill 2 m	144.275	Hawkins Hill	R27 550854	74	ZL2AOC	ZL2ARW	ZL2UHF	
Christchurch 2 m	144.285	Clubrooms	M35 832434	50	ZL3VP	ZL3RX	ZL3VHF	
Hokitika 2 m	144.286	Hokitika	J33 427300	49	ZL3TY	ZL3ADH	ZL3MHB	
Invercargill 2 m	144.296	Hospital	E47 531088	37	ZL4OX	ZL4TFJ	ZL4VHI	
Auckland 2 m	145.100	Nihotupu	R11 506732	66	ZL1QF	ZL1TN	ZL1VHF	
New Plymouth 2 m	145.225	Otaraoa Road	Q19 233368	27	ZL2BR	ZL2BZH	ZL2VHT	
Hawkes Bay 2 m	145.240	Latham St	V21 454813	25	ZL2DW	ZL2TC	ZL2MHB	
Waikato 70 cm	432.256	Hamilton	S14 108781	81	ZL1THG	ZL1TAT	ZL1VHW	
Hawkins Hill 70 cm	432.275	Hawkins Hill	R27 550854	74	ZL2AOC	ZL2ARW	ZL2UHF	
Christchurch 70 cm	432.285	Clubrooms	M35 832434	05	ZL3VP	ZL3RX	ZL3UHF	
Auckland 70 cm	433.100	Nihotupu	R11 506732	74	ZL1QF	ZL1TN	ZL1UHF	
New Plymouth 70 cm	433.225	Otaraoa Road	Q19 233368	27	ZL2BR	ZL2BZH	ZL2VHT	C
Hawkes Bay 70 cm	433.240	Latham St	V21 454813	25	ZL2TC	ZL2AJ	ZL2MHB	
Lower Hutt 32 cm	925.275	Lower Hutt	R27 676979	74	ZL2AOC	ZL2TAR	ZL2UHF	C
Waikato 23 cm	1296.256	Hamilton	S14 108781	81	ZL1THG	ZL1TAT	ZL1VHW	
Hawkins Hill 23 cm	1296.275	Hawkins Hill	R27 550854	74	ZL2AOC	ZL2ARW	ZL2UHF	
Auckland 23 cm	1297.100	Nihotupu	R11 506732	66	ZL1QF	ZL1TN	ZL1UHF	
New Plymouth 23 cm	1297.225	Otaraoa Road	Q19 233368	27	ZL2BR	ZL2BZH	ZL2VHT	
Lower Hutt 12 cm	2402.275	Lower Hutt	R27 711976	18	ZL2TVM	ZL2TWS	ZL2UHV	
Whangarei 9 cm	3456.306	Sherwood Rise	Q07 347049	28	ZL1DTE	ZL1TVP		
Belmont 5 cm	5760.050	Mt Belmont	R27 669016	74	ZL2ARW	ZL2TFZ	ZL2UHF	
Muriwai 5 cm	5765.000	Muriwai	Q11 392826	74	ZL1TBG	ZL1AVZ	ZL1SHF	
Hawkins Hill 3 cm	10250.000	Hawkins Hill	R27 550854	74	ZL2AOC	ZL2ARW	ZL2UHF	
Hawkins Hill 12 mm	24150.000	Hawkins Hill	R27 550854	74	ZL2AOC	ZL2ARW	ZL2SHF	

New Zealand Amateur Radio National System



New Zealand Amateur Radio Beacons

1. Frequencies are given in MHz
2. Small print in italics means beacon is not currently operating at 17 March 2006



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SHORT TERM SPECIAL PURPOSE (STSP) REPEATERS

MED Site Name	Output Frequency	Branch Number	Trustee 1	Trustee 2
Hamilton	145.325	12	ZL1IC	ZL1UCT
Alexandra	146.625	61	ZL4THT	ZL4GP
Upper Hutt	146.675	63	ZL2TNG	ZL2PDJ
Taumarunui	146.725	38	ZL1AO	ZL1UTH
Masterton	146.725	46	ZL2TFZ	ZL2UCW
Auckland	146.725	66	ZL1TGC	ZL1TN
Auckland	146.825	AREC	ZL1BNQ	ZL1AVR
Ballance Gorge	146.825	06	ZL2KG	ZL1AFZ
Whakatane	146.825	51	ZL1BCW	ZL1CDN
Papakura	146.875	65	ZL2SEA	ZL1MR
Hickling Park	146.875	60	ZL1BVO	ZL1DT
Wellington	146.875	74	ZL2TFZ	ZL2ARW
Napier	146.925	25	ZL2AJ	ZL2DW
Nelson	146.925	26	ZL2BCA	ZL2UL
Whau Bridge	146.925	03	ZLIMW	ZL1VRR
Christchurch	147.275	05	ZL3VP	ZL3RX
Wanganui	438.625	48	ZL2KR	ZL2THO
Auckland	438.625	AREC	ZL1BNQ	ZL1AVR
Nelson	438.625	26	ZL2BCA	ZL2UL
Auckland	438.675	AREC	ZL1BNQ	ZL1AVR
Wellington	438.675	74	ZL2TFZ	ZL2ARW
Auckland	438.725	AREC	ZL1BNQ	ZL1AVR
Timaru	438.725	34	ZL3TGR	ZL3AR
Hamilton	438.725	12	ZL1IC	ZL1UCT
Paraparaumu	438.725	69	ZL2GO	ZL2ARD
Auckland	438.750	AREC	ZL1BNQ	ZL1AVR
Papakura	438.750	65	ZL2SEA	ZL1MR
Auckland	438.775	AREC	ZL1BNQ	ZL1AVR
Levin	438.775	74	ZL2KG	ZL2TAR

SIMPLEX AND CALLING FREQUENCIES

144.100 Oceania SSB Calling
144.200 NZ SSB Calling
144.500 FM Calling
144.575 Data Simplex and APRS
144.600 Primary data/packet port-linked to Digital National System
144.625 Secondary data/packet port-linked to Digital National System
144.650 Primary Local Data/Packet Store/Forward
144.675 Secondary Local Data/Packet Store/Forward
145.250 Narrow band picture modes: FAX, Hellschriber, SSTV, etc.
146.425 to 146.600 FM Simplex
147.400 to 147.600 FM Simplex
147.500 Tertiary Local Data/Packet Store/Forward

432.200 SSB Calling
432.500 FM Calling
432.575 Data Simplex and APRS
432.600 Primary data/packet port-linked to Digital National System
432.625 Secondary data/packet port-linked to Digital National System
432.650 Primary Local Data/packet Store/Forward
432.675 Secondary Local Data/Packet Store/Forward
438.700 Voice-over-Internet Simplex
438.300 Tertiary Local Data/packet Store/Forward

Above 144 MHz, use the following as a guide to designated frequencies:
F to F+1 MHz for standard narrow band or weak signal segment, where F = 144, 432, 621, 925, 1296, 2424, 3399, 5760, 10368, 24192, 47088, 80640 MHz.

F+0.200 SSB calling
F+0.250 to 0.300 Beacons (geographic plan - 1 kHz spacing)
F+0.500 FM calling
F+0.575 Data Simplex and APRS
F+0.600 Primary data/packet port-linked to Digital National System
F+0.625 Secondary data/packet port-linked to Digital National System
F+0.650 Primary local data/packet
F+0.675 Secondary local data/packet
F+0.700 Voice-over-Internet Simplex

There may be additional designated frequencies in this segment in some bands.
Prepared by FMTAG

NCDXF/IARU INTERNATIONAL BEACON NETWORK

The NCDXF, in co-operation with the IARU, constructed and operates a worldwide network of high-frequency radio beacons on 14.100, 18.110, 21.150, 24.930 and 28.288 MHz. These beacons help both amateur and commercial high-frequency radio users assess the current condition of the ionosphere. The entire system is designed, built and operated by volunteers at no cost except the actual price of hardware components, shipping costs, and so on.

In principle, one can simple listen on the beacon frequencies and copy the CW call-signs of the various beacons to figure out where the band is open, but in practice, not every ham operator can copy calls at twenty-two words per minute and some beacons may be heard at too low a signal strength to catch the call. Becuase the beacons tranmit at known times, it is easy to know which beacon one is hearing without actually copying the CW call-sign. Since the beacons are running 100 W to a vertical, even a weak beacon signal may indicate a path with excellent propagation for stations using higher power and directive antennas.

For the latest information see the NCDXF website at <http://www.ncdxf.org/beacons.html>.

Table 1. NCDXF/IARU Beacon Transmission Schedule

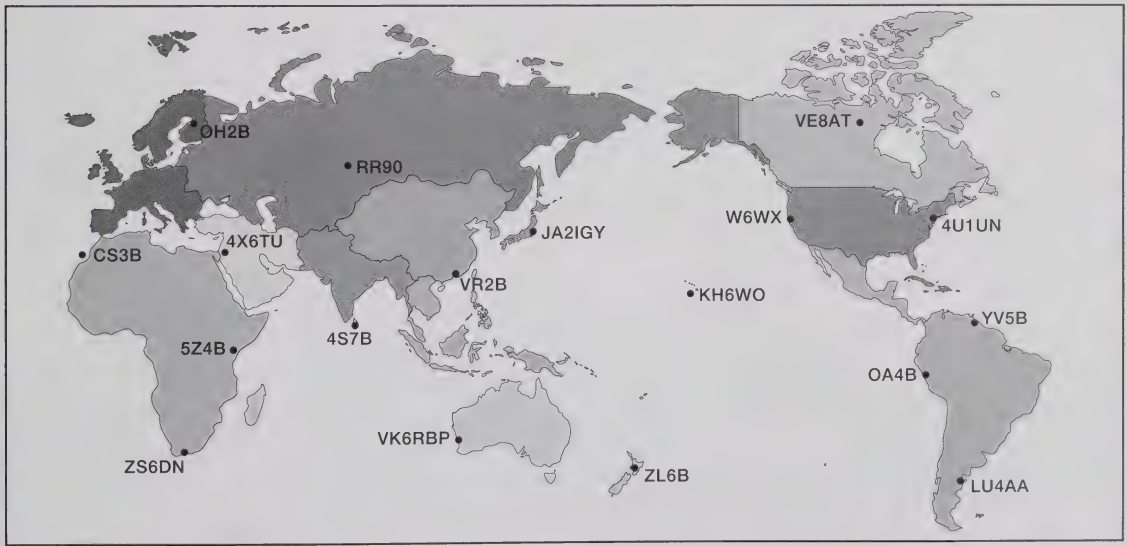
As at July 2006.

This table gives the minute and second within each hour of the start of the first transmission of each of beacon on each frequency. Each transmission is repeated every three minutes. A transmission consists of the callsign of the beacon sent at 22 words per minute followed by four one-second dashes. The callsign and the first dash are sent at 100 watts. The remaining dashes are sent at 10 watts, 1 watt and 0.1 watts.

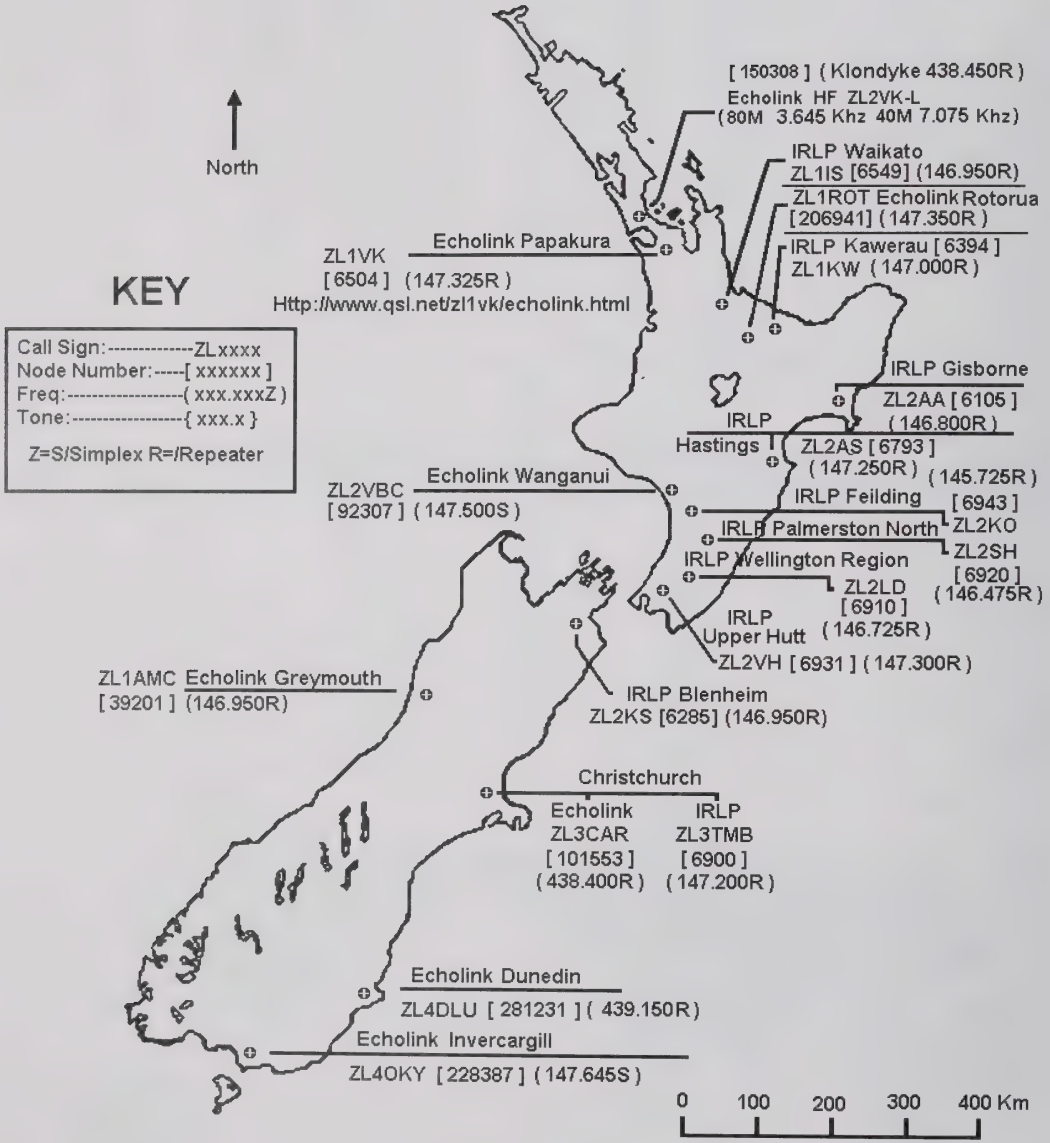
Slot	Country	Call	14.100	18.110	21.150	24.930	28.200	Operator	Status
1	United Nations	4U1UN	00:00	00:10	00:20	00:30	00:40	UNRC	OK
2	Canada	VE8AT	00:10	00:20	00:30	00:40	00:50	RAC/NARC	OK
3	United States	W6WX	00:20	00:30	00:40	00:50	01:00	NCDXF	OK
4	Hawaii	KH6WO	00:30	00:40	00:50	01:00	01:10	NOARG, HARC	OK
5	New Zealand	ZL6B	00:40	00:50	01:00	01:10	01:20	NZART	OK
6	Australia	VK6RBP	00:50	01:00	01:10	01:20	01:30	WIA	OK
7	Japan	JA2IGY	01:00	01:10	01:20	01:30	01:40	JARL	OK
8	Russia	RR9O	01:10	01:20	01:30	01:40	01:50	SRR	OK
9	China	VR2B	01:20	01:30	01:40	01:50	02:00	CRSA, HARTS	OK
10	Sri Lanka	4S7B	01:30	01:40	01:50	02:00	02:10	RSSL	OK
11	South Africa	ZS6DN	01:40	01:50	02:00	02:10	02:20	ZS6DN	OK
12	Kenya	5Z4B	01:50	02:00	02:10	02:20	02:30	RSK	OK
13	Israel	4X6TU	02:00	02:10	02:20	02:30	02:40	U Tel Aviv	OK
14	Finland	OH2B	02:10	02:20	02:30	02:40	02:50	U Helsinki	OK
15	Madeira	CS3B	02:20	02:30	02:40	02:50	00:00	ARRM	OK
16	Argentina	LU4AA	02:30	02:40	02:50	00:00	00:10	RCA	OFF
17	Peru	OA4B	02:40	02:50	00:00	00:10	00:20	RCP	OK
18	Venezuela	YV5B	02:50	00:00	00:10	00:20	00:30	RCV	OK

Table 2. NCDXF/IARU Beacon Locations

Slot	Country	Call	Location	Latitude	Longitude
1	United Nations	4U1UN	New York City	40° 45' N	73° 58' W
2	Canada	VE8AT	Eureka, Nunavut	79° 59' N	85° 57' W
3	United States	W6WX	Mt. Umunhum	37° 09' N	121° 54' W
4	Hawaii	KH6WO	Laise	21° 38' N	157° 55' W
5	New Zealand	ZL6B	Masterson	41° 03' S	175° 36' E
6	Australia	VK6RBP	Rolystone	32° 06' S	116° 03' E
7	Japan	JA2IGY	Mt. Asama	34° 29' N	136° 47' E
8	Russia	RR90	Novosibirsk	54° 59' N	82° 54' E
9	China	VR2B	Hong Kong	22° 16' N	114° 11' E
10	Sri Lanka	4S7B	Colombo	6° 54' N	79° 52' E
11	South Africa	ZS6DN	Pretoria	25° 54' S	28° 16' E
12	Kenya	5Z4B	Kilifi	3° 37' S	39° 50' E
13	Israel	4X6TU	Tel Aviv	32° 06' N	34° 48' E
14	Finland	OH2B	Espoo	60° 11' N	24° 50' E
15	Madeira	CS3B	Santo da Serra	32° 43' N	16° 48' W
16	Argentina	LU4AA	Buenos Aires	34° 37' S	58° 21' W
17	Peru	OA4B	Lima (temporary)	12° 04' S	76° 57' W
18	Venezuela	YV5B	Caracas	10° 25' N	66° 51' W



New Zealand Amateur Radio VoIP Systems



Prepared by Cyril Rosewarne ZL2VBC—August 2006

TIME AND FREQUENCY

amended by Dr David Black ZL1MZ
prepared by the late A. C. CORNEY ZL2BBJ

Review of Timekeeping in New Zealand

Timekeeping began in New Zealand in 1862, when Captain Stephen Carkeek, Controller of Customs, recommended to the Superintendent of Wellington Province that a transit instrument, an astronomical clock, and a time ball be placed in the new Custom House which was to be erected on what eventually became the site of the General Post Office.

A transit instrument allows mean local time to be calculated. This is the time appropriate to the longitude of the point of measurement, relative to the Greenwich Meridian, allowing four minutes per degree of longitude, or one hour per 15°. It was not until 1868 that the General Government proclaimed a uniform time for New Zealand based on the meridian 172° 30' East. The advent of the telegraph had made rapid communications possible and therefore the concept of a uniform time feasible without the need for observations in every town and port. New Zealand was in fact the first country to establish a uniform time by legislation, and its scientists played an important role in establishing uniform time zones in certain other countries.

A new Colonial observatory was built in Wellington in 1869 in the Bolton Street Cemetery, on the site where the Richard John Seddon memorial now stands. Seddon's death in 1906, and the choice of the site for the memorial, precipitated the move of the Observatory to its present site in the Botanical Gardens in Kelburn. A small red brick building was erected on the site of the old Gardens Battery. It was completed in 1907 and became known as the Hector Observatory, after Sir James Hector, who had been Director of the Colonial Observatory.

Experiments with radio time signals began in 1916, with the reception of signals from Melbourne and transmission to ships in the vicinity of New Zealand and to Tahiti. Other regular services were established in 1919.

In 1926 the Department of Scientific and Industrial Research was formed, and became responsible for the Time Service. Although precision in time signals of a quarter of a second was claimed until the 1950s, the actual errors were often greater than this. The Geophysics Division of the DSIR was formed in 1951, and took over administrative responsibility for the Time Service. It was not until 1962, however, that any real advances were made. Clocks which used the very stable electrical oscillations of quartz crystals were installed. Checks were made regularly against radio time signals from overseas which were obtained from astronomical observations, and appropriate corrections were made for the propagation time to Wellington.

In 1987 responsibility for the Time Service passed to the Physics and Engineering Laboratory, DSIR, and was relocated from Kelburn in Wellington to Gracefield, Lower Hutt. In 1992 when the DSIR was disestablished and its responsibilities taken over by Crown Research Institutes, the Time Service remained at Gracefield but became the responsibility of the Measurement Standards Laboratory of New Zealand (MSL), part of Industrial Research Limited.

UTC and UT1

Since 1967 the world's time has been related to an even more stable clock than our rotating earth—the vibrations of the caesium atom. Each element has its characteristic frequency of vibration, such as that of sodium which gives us the familiar orange colour of highway lighting. Although the characteristic frequency of caesium is particularly stable, a caesium clock on its own does not constitute a time standard. Rather, information from caesium clocks maintained by standards laboratories around the world is collated by the Bureau International des Poids et Mesures (BIPM) in Paris to provide Co-ordinated Universal Time (UTC). As with the old Greenwich Mean Time UTC is the time at zero degrees longitude.

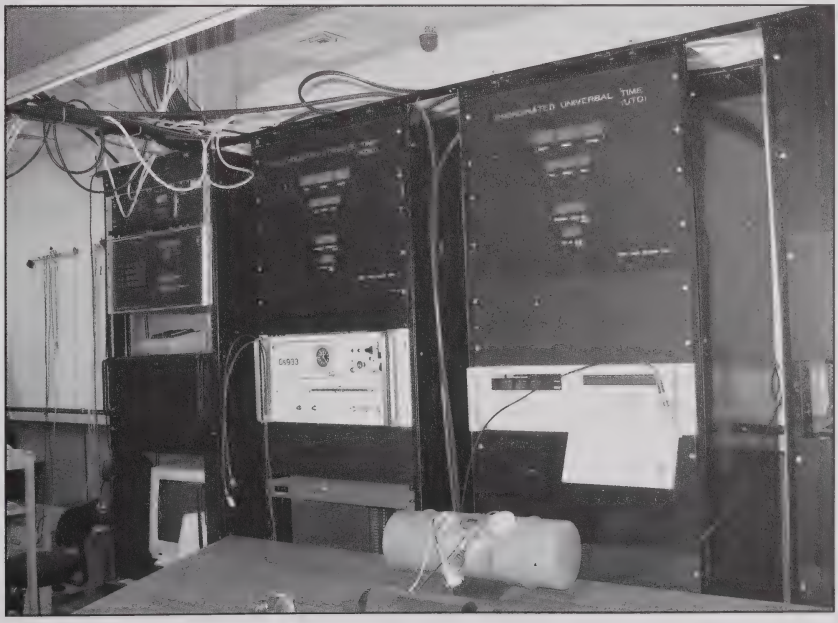
Because the rate of rotation of the earth is not constant, differences between mean solar time (UT1) and the atomic time (TAI) accrue which in time could become inconvenient. It is therefore necessary to make periodic adjustments to the atomic scale so that it roughly approximates UT1. At the beginning of 1972 the cumbersome "variable length second" used to adjust atomic time was replaced by the "leap second concept". UTC was set up to be slightly fast, so that a "leap second" could be added on the first day of January or July when necessary, but would not be expected to average more than one a year. The last adjustment was made on January 1, 1999 of one second so that the atomic time scale has now been incremented by 32 seconds since 1972. The atomic time scale is thus at all times within ±0.7 seconds of mean solar time. The difference between UT1 and UTC, known as DUT1, is encoded and broadcast by time and frequency stations.

The New Zealand Time and Frequency Standard

The New Zealand time standard is maintained by means of three caesium clocks. Linkage to the BIPM is via the Global Positioning Satellite system (GPS) which gives accuracies of better than 100 nanoseconds. The satellite system is also utilised to transfer the MSL atomic time to the BIPM to be included in the ensemble of clocks used to calculate the international atomic time scale.

The time standard is also New Zealand's frequency standard, accurate to parts in 10^{13}. Standard frequency dissemination to New Zealand users is via the TV1 and TV2 television transmissions. The colour burst frequencies of these transmissions are controlled by GPS-disciplined high accuracy oscillators which are monitored against the MSL caesium clocks, and are usually within 10^{11} of the nominal colour burst frequency of 4.43361875 MHz. The highest accuracies, approaching one part in 10^{12}, are obtained by comparing the timing of selected synchronisation pulses with results obtained at MSL.

The most widely used time signals in New Zealand are those generated by MSL, for broadcast by National Radio. These signals are transmitted every hour and consist of six "pips" of 1000 Hz tone, at one second intervals, the beginning of each pip marking the exact second. When a pip marks the exact hour, its length is doubled. The precision with which the beginning of the long pip marks the exact hour is usually less than 10 S as it leaves



The New Zealand Caesium Clock installation.

MSL Delays along telephone lines to Radio New Zealand and in radio propagation to the remote parts of New Zealand can amount to a few milliseconds. When it is necessary to insert a leap second, seven pips are broadcast.

Dial up phone time for computers

MSL has developed a dial-up time service for computers. On dialling the service (0900 45-222) using a 1200 baud modem, a series of time strings is transmitted which contain the current time and date for both New Zealand time and UTC time, and an on-time marker. Warning is provided of forthcoming leap seconds and daylight saving changes. The accuracy of the system is limited by propagation delays in the telephone network and scrambler delays in the modems to around 100 ms. Software for IBM-compatible PCs to access the system automatically is available at no cost from MSL.

Internet Time

MSL operates a Network Time Protocol (NTP) server that can be used for setting the time of computers connected to the internet. Briefly, NTP works by the computer wanting the time (the client), sending a request to an NTP server. Included in the request is the client's time at which the request was sent. On receiving the request, the server adds its own timestamp to the request and sends it back to the client that notes the arrival time of the message. Armed with these three times, the client can determine the roundtrip delay and its time offset from the server time assuming the travel times are the same in each direction. Varying delays in the Internet can produce an error in a single time determination. The full NTP server programme maintains a software phase-lock loop so the time measurements are averaged over a long period of time to maintain the time in the client to better than 1 ms.

The MSL server is connected to a pulse-per-second output from one of the MSL caesium clocks and has a time stability of around 10 microseconds over the long term.

Further information on the MSL NTP server is on the MSL website at <www.irl.cri.nz/msl>. Information on NTP can be found at <www.ntp.org>.

WWV and WWVH

The National Institute of Standards and Technology (NIST) broadcasts standard time and frequency transmissions continuously through stations WWV and WWVH. Station WWV is located at Fort Collins, Colorado and broadcasts continuously on the radio frequencies of 2.5, 5,10, 15 and 20 MHz. Station WWVH is located at Kauai, Hawaii and broadcasts continuously on the radio frequencies of 2.5, 5,10 and 15 MHz.

Both stations are controlled by caesium atomic oscillators. The frequencies are stable to better than one part in 10^{11} at all times, compared with the primary atomic standards maintained at the NIST Boulder laboratories. Changes in the propagation medium cause frequency changes which are several orders greater than the uncertainties described above.

Seconds pulses are transmitted continuously, even during tones and announcements, and are derived from the same oscillator which generates the carrier frequency. Seconds pulses comprise five cycles of 1000 Hz tone for WWV and six cycles of 1200 Hz tone for WWVH. Each minute, except the first of the hour, begins with an 800 ms tone of 1000 Hz at WWV and 1200 Hz at WWVH. Each pulse is preceded by 10 ms of silence and followed by 25 ms of silence. The first minute of the hour begins with an 800 ms tone of 1500 Hz from both stations.

At WWVH, time announcements are made by a female voice in the period 45 seconds to 52.5 seconds after each minute, while at WWV a male voice announces the time in the last 7.5 seconds of each minute. All time announcements are referred to in terms of UTC as maintained by the NIST The 0 to 24 hours system is used. The first two figures give the hour and the last two figures give the minutes past the hour when the tone returns. The time announcement refers to the end of an announcement interval, ie, to the time when the 0.8 second long audio tone begins. At 1035 UTC for instance, the voice announcement, given in English, is: "At the tone, ten hours thirty-five minutes Co-ordinated Universal Time".

Standard audio frequencies of 440 Hz, 500 Hz and 600 Hz are broadcast by the two stations. The duration of each transmitted tone is approximately 45 seconds. A 600 Hz tone is broadcast by WWV during odd minutes and during even minutes by WWVH. A 500 Hz tone is broadcast during alternate periods unless voice announcements or silent periods are scheduled. The 440 Hz tone is broadcast beginning one minute after the hour at WWVH and two minutes after the hour at WWV. The 440 Hz tone is omitted during the first hour of the UTC day to act as a day marker. No audio tones or special announcements are broadcast during a semi-silent period from either station. The periods are from 45 to 50 minutes after the hour from WWV and from 15 minutes to 20 minutes after the hour at WWVH.

The method of coding the corrections (DUT1) to UTC to obtain UT1 uses a system of double second pulses. The first through eighth second pulse, when marked by a double pulse, will indicate a "plus" correction, and from the ninth through the fifteenth a "minus" correction. The amount of correction is determined by counting the number of second pulses which are doubled. For example, if the first, second and third second pulses are doubled, the correction is 0.3 seconds. Or if the ninth, tenth, eleventh, twelfth, thirteenth and fourteenth second pulses are doubled, the correction is "minus" 0.6 seconds.

A modified IRIG-H time code, giving the year, day of year, hour, minute, DUTi value, and information on impending leap seconds and daylight saving (in the USA) is broadcast continuously on a 100 Hz sub-carrier.

A broadcast of radio propagation conditions and solar activity is broadcast in voice during part of every eighteenth minute of each hour from WWV. The announcements are short term forecasts, updated as required, every six hours if needed.

VNG

The Australian time and frequency station VNG is no longer operational.

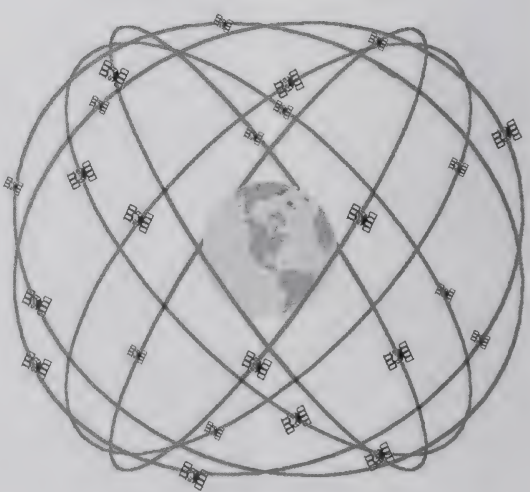
Global Positioning System

The Global Positioning System (GPS) is a world-wide satellite-based radionavigation system developed and operated by the US Department of Defence. It comprises 21 satellites orbiting the earth in 12 hour orbits. Each satellite broadcasts information on two microwave frequencies (1575.42 and 1227.60 MHz) giving the time according to the on-board caesium clock, and the current satellite position. In a navigation receiver this information is used to determine the receiver's position anywhere on earth. The deliberate degradation of the accuracy of the time information available to civilian users ceased in May 2000. Time accuracy of the order of 10 nanoseconds and a frequency stability of better than one part in 10^{12} can be obtained.

Although some manufacturers of GPS equipment claim traceability of the time and frequency information to the US Naval Observatory, such traceability is not recognised by most measurement accreditation bodies. This is because GPS is primarily a navigation system and the provision of time and frequency information is an incidental feature. It can be wrong at times: we have noted leap seconds being introduced at the correct time for the US but taking a further six hours before receivers in New Zealand were aware of the change.

For additional information all the MSL services are covered at <http://msl.irl.cri.nz/services/time/index.html>.

A. C. Corney
Measurement Standards Laboratory, Industrial Research Limited



SHORT WAVE LISTENING

Original text and photos by BARRY WILLIAMS ZL1ACZ
Edited by KEVIN HAND ZL4QD

Question a gathering of hams, and one will inevitably find that several were once DXers or shortwave listeners before they moved on to join the ranks of amateur radio. Many listeners progress no further than just being listeners, a few becoming serious DXers, but for some the novelty of talking to the world draws them into amateur radio. Those who have progressed through the hobby of DXing have acquired much of the basic radio theory, and are better prepared for the study required for sitting the amateur radio exam.

The similarities between the two hobbies are numerous. The bands that DXers monitor range from VLF to VHF. The modes range from AM to FM. With the increasing use of computers, digital reception is gaining interest. However, despite the widening range of options, listening to shortwave broadcasts still remains the most popular activity.

Like amateur radio, the equipment used over the years has changed. Gone are the days when the dual band household radio served as the DX receiver. After the war, DXers used war-surplus radio sets such as the Marconi R1155, ARC5 and Bendix MN26C compass receiver. Gradually, valve communication receivers, such as the Eddystone and Hallicrafters became available and affordable. Today, like the amateur, we are in the digital age, with sophisticated receivers ranging from the small portable SONY 7600G to the ICOM R7x series and the professional NRD545 communications receivers and latterly a variety of Software Defined Radios (SDR) or PC Controlled Radios (PCR). Over the years amateur equipment has developed to an even greater extent, with many hams using multi-functional transceivers which incorporate all-band general coverage reception.

Unlike the amateurs, the antennas used by the DXer over the years have changed little. The fortunate few who have the space to run out a Beverage still chase the elusive medium wave DX. Most persevere with an end-fed wire or a dipole. Those DXers living in high noise suburbia try and develop low-noise antennas. Like amateur radio there is great scope for development, but we do tend to lack the technical expertise that the ham fraternity can draw upon. Because of the wide range of shortwave bands, the DXer does have great difficulty designing a multi-band antenna. However, with regard to propagation, I feel that any top DXer can "hold their own" with a ham DXer. Propagation is just as important to both hobbies. We complain about band conditions just as much as the ham down the road.

For many shortwave listeners, the QSLing of reception reports is the whole purpose of it all. But more and more, verification is becoming less important and just hearing the station and programme is the enjoyment. The variety of programmes heard over international broadcasters is far more varied and interesting than that heard on domestic radio. Nevertheless, serious DXing is still the backbone of the hobby, and the thrill of hearing and finally verifying a rare low powered station from some exotic country, is no different than that experienced by an amateur DXer.

DXing in New Zealand is almost as old as amateur radio, with the first DX club being formed in 1931. Although the New Zealand DX Club folded in the late 1940s, two other DX clubs are still active; the New Zealand DX Radio Association, now over 70 years old, and the New Zealand Radio DX League, which will celebrated its 60th anniversary in 2008.

Group of international DXers chasing exotic broadcast signals at the 50th Anniversary Convention of New Zealand Radio DX League in 1998. Seated: Toshimichi Ohtake (Japan), Anker Petersen (Denmark). Standing: Ray Crawford and Chris Martin (Australia), Risto Vahakainu.

Keen members of the New Zealand Radio DX League at a DXpedition at Green Bay, Auckland, to hear special shortwave broadcasts from Radio St Helena. From left: Barry Williams ZL1ACZ, Paul Wells-Green ZL1WGP, the late Ivor Williams ZL1AGO and Arthur de Maine.

Amateur radio, like other hobbies, loses many participants to other pastimes and interests. This loss of interest in some cases may be due to boredom or burnout with the hobby. New horizons and challenges may be needed. We all get stale or frustrated at some time. May it be suggested to those amateurs who feel they need a variation or change, but still retain their interest in wireless, is that they consider shortwave listening? Some hams that entered amateur radio through the hobby of DXing might consider revisiting it. Most hams have an antenna and a rig capable of general coverage reception. It might be worthwhile tuning a bit further than just the ham bands. Start listening to the world of International Shortwave Broadcasting. Both hobbies fit nicely together, as found in Auckland where the Western Suburbs Radio Club allows the Auckland Branch of the New Zealand Radio DX League to hold its monthly meetings in their clubrooms. In return, Branch 03 has gained several newly licensed hams from the ranks of the DXers. Check your *Break-In* and read Kevin Hand's "Shortwave Listening" section. Try listening to a few broadcasts or write for a sample of the New Zealand Radio DX League's monthly magazine, the *NZ DX TIMES*. The New Radio DX League has its own Internet site at <www.radiodx.com>, which is a great starting point for anyone interested in shortwave listening. I have found that shortwave listening and amateur radio complement each other and have helped maintain my interest in both hobbies for many years.

Chart

MARITIME RADIO VHF COVERAGE

Note: This map represents approximate location and coverage of Maritime New Zealand's VHF radio stations. From time to time gaps may exist within the areas shown due to terrain shadows and system maintenance. Terrain shadows can occur close to the shore under cliffs or in bays and fiords.

- 24hr/day listening watch is kept by all VHF stations on channel 16.
- The coverage shown above is for vessels with a 25W radio working into a correctly installed antenna mounted 4m or more above the waterline.

NEW ZEALAND COASTAL MARITIME RADIO STATIONS

VHF stations

The following table shows the scheduled broadcast times for Maritime Safety Information (MSI) transmitted by Maritime Radio VHF stations located around the New Zealand coast. Broadcasts will include Navigational and Meteorological warnings, the situation and forecast for all New Zealand sea areas, and Coastal Reports for Shipping. Transmissions will be made simultaneously on all of the working channels following a broadcast announcement call on VHF Ch 16. Vessels must then ensure they select the **appropriate working channel,** (Table 1), based on their location at the time. All stations maintain continuous watch on Ch 16—Distress and Calling—and are remotely controlled from the Maritime Operations Centre, Wellington.

Ph: (04) 914-8333
Fax: (04) 914-8334

Call

Initial call should be made on Ch 16 (site name) Maritime Radio, eg: Plenty Maritime Radio (see Table 1).

Scheduled broadcast times (NZST or NZDT)

Warnings and Weather

0533, 0733, 1033, 1333, 1733, 2133.

The 1033 broadcast will only including all warnings in force and the coastal reports as at 0900 NZST or NZDT (no situation or forecasts).

Chatham Islands Fisherman's Radio

Distress and working

(No listening watch kept). Ch 60 (Chatham Island) and Ch 62 (Pitt Island).

Scheduled Broadcast times—Warnings and Weather

0603†, 1403†, 1803†, 2203†.

†Chatham Islands time is 45 minutes ahead of New Zealand local time.

MF/HF station

Taupo Maritime Radio (ZLM)

38° 52'S 176° 26'E.

Public MF/HF station for distress and safety purposes. Broadcasts of weather situation, forecasts and warnings, and navigational warning as shown in the schedule.

Note: remotely controlled from the Maritime Operations Centre.

Continuous watch on 2182, 4125, 6215, 8291, 12290 16420 kHz.

Call 2182, 4125, 6215, 8291, 12290, 16420 kHz.

Working 2207, 4146, 6224, 8297, 12356, 16531 kHz.

HF radio communications forecasts and warnings

Maritime NZ promulgate forecasts and warning to help mariners in selecting the most effective HF (SSB) frequency to use. HF radio communications change over time in response to changes in the Earth's ionosphere and in the amount of ultra-violet light emitted by the sun. Some of these changes happen over long cycles of many years, and some can be quite sudden and of short duration. The two types of information cater for these extremes.

HF radiocommunications forecasts

For the longer term variations, forecasts will be issued as Notices to Mariners every two or three months. See HF Night/Day Coverage Maps which provide assistance to the mariner in selecting the optimum HF frequency depending on their position and the time of day.

HF radiocommunications warnings

For short term, specific disturbances that are expected to adversely affect communications, Maritime NZ will issue HF Radio Communications Warnings. These warnings will describe the expected changes to the HF radio communications conditions, and indicate to the mariner how communications can be optimized for the period of the change. For severe disruptions, the warnings may indicate that communication is likely to be impossible at certain times and places. Armed with this warning the mariner can prepare in advance. These warnings will be broadcast on Taupo Maritime Radio ZLM as for navigational warnings.

Table 1

Station		Working	Station		Working
Cape Reinga	Maritime Radio	Ch 68	Picton	Maritime Radio	Ch 68
Kaitaia	Maritime Radio	Ch 71	D'Urville	Maritime Radio	Ch 67
Great Barrier Island	Maritime Radio	Ch 25	Farewell	Maritime Radio	Ch 68
Auckland	Maritime Radio	Ch 71	Kaikoura	Maritime Radio	Ch 67
Plenty	Maritime Radio	Ch 68	Akaroa	Maritime Radio	Ch 68
Runaway	Maritime Radio	Ch 71	Waitaki	Maritime Radio	Ch 67
Tolaga	Maritime Radio	Ch 67	Cha lmers	Maritime Radio	Ch 71
Napier	Maritime Radio	Ch 68	Westport	Maritime Radio	Ch 71
Wairarapa	Maritime Radio	Ch 67	Greymouth	Maritime Radio	Ch 68
Wanganui	Maritime Radio	Ch 69	Fox	Maritime Radio	Ch 67
Cape Egmont	Maritime Radio	Ch 71	Fiordland	Maritime Radio	Ch 71
Taranaki	Maritime Radio	Ch 67	Puysegur	Maritime Radio	Ch 67
Wellington	Maritime Radio	Ch 71	Bluff	Maritime Radio	Ch 68
			Stewart Island	Maritime Radio	Ch 71

INTERNATIONAL VHF MARINE CHANNELS

Channel	Ship Frequencies	
	Tx	Rx
1	156.050	150.650
2	156.100	160.700
3	156.150	160.750
4	156.200	160.200
5	156.250	160.850
6	156.300	156.300
7	156.350	160.950
8	156.400	156.400
9	156.450	156.450
10	156.500	156.500
11	156.550	156.550
12	156.600	156.600
13	156.650	156.650
14	156.700	156.700
15	156.750	156.750

Channel	Ship Frequencies	
	Tx	Rx
16	156.800	156.800
17	156.850	156.850
18	156.900	161.500
19	156.950	161.550
20	157.000	161.600
21	157.050	161.650
22	157.100	161.700
23	157.150	161.750
24	157.200	161.800
25	157.050	161.850
26	157.300	161.900
27	157.350	161.950
28	157.400	162.000
60	156.025	160.625
61	156.075	160.075

Channel	Ship Frequencies	
	Tx	Rx
62	156.125	160.725
63	156.175	160.775
64	156.225	160.825
65	156.275	160.875
66	156.325	160.925
67	156.375	156.375
68	156.425	156.425
69	156.475	156.475
70	156.525	156.525
71	156.575	156.575
72	156.625	156.625
73	156.675	156.675
74	156.725	156.725
77	156.875	156.875
78	156.925	161.525

Channel	Ship Frequencies	
	Tx	Rx
79	156.975	161.575
80	157.025	161.625
81	157.075	161.625
82	157.125	161.725
83	157.175	161.775
84	157.225	161.825
85	157.275	161.875
86	157.325	161.925
87	157.375	157.375
88	157.425	157.425
AIS-1	161.975	161.975
AIS-2	162.025	162.025

NEW ZEALAND RADIO SPECTRUM USAGE

This table indicates significant, but not necessarily exclusive, existing and planned usage within New Zealand of ranges of frequencies (ie "bands") by various radio services. It is based on the International Radio Table of Allocations—particularly where international co-ordination is important such as in the aeronautical, maritime, satellite, navigation, spece research, astronomy and amateur services. It should be noted, however, that some spectrum in New Zealand is the subject of privately owned management rights and this table is indicative usage based on such current information held by the Ministry as to the nature of licences issed by the managers of that spectrrum.

Ministry of Economic Development
(Radio Spectrum Division)

9–90	Fixed, Maritime-Mobile and Radionavigation
90–120	Radionavigation (LORAN C)
120–140	Restricted Radiation Devices (RRD)
140–165	Fixed, Maritime-Mobile and Radionavigation
165–190	Fixed, Radionavigation and Amateur
190–285	Aeronautical Beacons
285–325	Aeronautical and Maritime Beacons
325–415	Aeronautical Beacons
415–521	Maritime
521–1612	MF-AM Sound Broadcasting
1612–1690	Aeronautical Beacons, Broadcasting
1690–1800	Cordless Telephone (CT1 Base Tx), Radio Buoys
1800–1950	Amateur 160 m Band
1950–2000	Radio Buoys
2000–2300	Fixed and Mobile
2300–2495	Broadcast 120 m Band (Tropical)
2495–2505	Standard Frequency 2.5 MHz
2505–2850	Fixed and Mobile
2850–3155	Aeronautical
3155–3200	Fixed and Mobile
3200–3400	Broadcast 90 m Band (Tropical)
3400–3500	Aeronautical
3500–3900	Amateur 80 m Band
3900–4000	Broadcast 75 m Band
4000–4438	Maritime
4438–4650	Fixed and Mobile
4650–4750	Aeronautical
4750–4995	Broadcast 60 m Band (Tropical)
4995–5005	Standard Frequency 5 MHz
5005–5060	Broadcast 60 m Band (Tropical)
5060–5480	Fixed and Mobile
5480–5730	Aeronautical
5730–5900	Fixed and Mobile
5900–6200	Broadcast 49 m Band
6200–6525	Maritime
6525–6765	Aeronautical
6765–6795	ISM and RRD
6795–7000	Fixed and Mobile
7000–7100	Amateur 40 m Band
7100–7350	Broadcast 41 m Band, Amateur (7100–7300)
7350–8100	Fixed and Mobile
8100–8815	Maritime
8815–9040	Aeronautical
9040–9400	Fixed
9400–9900	Broadcast 31 m Band
9900–9995	Fixed
9995–10005 MHz	Standard Frequency 10 MHz
10.005–10.100	Aeronautical
10.100–10.150	Amateur 30 m Band
10.150–11.175	Fixed
11.175–11.400	Aeronautical
11.400–11.600	Fixed
11.600–12.100	Broadcast 25 m Band
12.100–12.230	Fixed
12.230–13.200	Maritime
13.200–13.360	Aeronautical
13.360–13.550	Fixed and Mobile
13.550–13.570	ISM and RRD
13.570–13.570	Broadcast 22 m Band
13.870–14.000	Fixed
14.000–14.350	Amateur 20 m Band
14.350–14.990	Fixed
14.990–15.010	Standard Frequency 15 MHz
15.010–15.100	Aeronautical
15.100–15.800	Broadcast 19 m Band
15.800–16.360	Fixed
16.360–17.410	Maritime
17.410–17.480	Fixed
17.480–17.900	Broadcast 16 m Band
17.900–18.030	Aeronautical
18.030–18.068	Fixed
18.068–18.168	Amateur 17 m Band
18.168–18.780	Fixed
18.780–18.900	Maritime
18.900–19.020	Broadcast 15 m Band
19.020–19.680	Fixed
19.680–19.800	Maritime
19.800–19.990	Fixed
19.990–20.010	Standard Frequency 20 MHz
20.010–21.000	Fixed
21.000–21.450	Amateur 15 m Band
21.450–21.850	Broadcast 13 m Band
21.850–21.870	Fixed
21.870–22.000	Aeronautical
22.000–22.855	Maritime
22.855–23.200	Fixed
23.200–23.350	Aeronautical
23.350–24.890	Fixed and Mobile
24.890–24.990	Amateur 12 m Band
24.990–25.010	Standard Frequency 25 MHz
25.010–25.070	Fixed and Mobile
25.070–25.210	Maritime
25.210–25.550	Fixed and Mobile
25.550–25.670	Astronomy
25.670–26.100	Broadcast 11 m Band
26.100–26.175	Maritime
26.175–26.300	Fixed and Mobile

26.300–44.000	26.300			
		Citizen Radio Service "CB" Band		
		CB1	26.330	
		CB40	26.770	
	26.800			
		Fixed and Mobile		
	26.960			
		Paging, ISM (27.120 MHz), RRD		
	27.300			
		Fixed and Mobile		
	28.000			
		Amateur 10 m Band		
	29.700			
		RRD		
	30.000			
		Cordless Telephone "CT1" Band		
		CT1-1	30.075 Base Tx	
		CT-20	30.775 Base Tx	
	30.800			
		Paging 31.3–31.6 MHz, RRD		
	32.000			
		Fixed and Mobile (TV Sound IF 33.40 MHz)		
	35.000			
		ISM 35.4–36.0, RRD Telecontrol and Telemetry 36.0–36.6 MHz		
	37.200			
		Fixed and Mobile (TV Vision IF 38.90 MHz		
	39.000			
		RRD		
	39.700			
		Cordless Telephone "CT1" Band		
		CT1-1	39.776 Mobile Tx	
		CT1-29	40.475 Mobile Tx	
	40.500			
		ISM 40.66–40.7 MHz, RRD		
	41.000			
		Fixed and Mobile		
44.000–68.000	44.000			
		VHF Television Broadcasting (Band I)		
		CHL 1	44–51	
	51.000			
		Amateur 6 m Band		
	53.000			
		Fixed, Mobile and Amateur		
	54.000			
		VHF Television Broadcasting (Band I)		
		CHL 2	54–61	
		CHL 3	61–68	
68.000–74.800	68.000			
		Fixed "AB" Band		
		ABX1	68.0125	Simplex
		ABX159	69.9875	Simplex
		AB1	70.0125	Alpha Tx
		AB143	71.7875	Alpha Tx
		ABX160	71.8125	Simplex
		ABX174	71.9875	Simplex
	72.000			
		RRD and Cordless Telephone "CT1" Band		
		CT1-22	72.800 Mobile Tx	
		CT1-29	72.975 Mobile Tx	
	73.000			
		Fixed "AB" Band		
		AB1	73.0125	Beta Tx
		AB143	74.7875	Beta Tx
74.800–75.200	74.800			
		Aeronautical Marker Beacons		
75.200–80.000	75.200			
		Land Mobile "ESA" Band (Emergency Services)		
		ESA1	75.2250	Base Tx
		ESA86	76-2875	Base Tx
	76.300			
	78.100	Not allocated		
		Land Mobile "ESA" Band (Emergency Services)		
		ESA1	78.10625	Mobile Tx
		ESA86	79.16875	Mobile Tx
	79.200			
80.000–88.000	80.000	Not allocated		
		Land Mobile "A" Band		
		AX01	80.0125	Simplex
		AX41	80.5125	Simplex
		A501	80.5250	Base Tx
		A539	81.0000	Base Tx
		A1	81.0125	Base Tx
		A242	84.0250	Base Tx

		AX101	84.0375	Simplex
		AX136	84.4750	Simplex
		A501	84.49375	Mobile Tx
		A539	84.96875	Mobile Tx
		A1	84.98125	Mobile Tx
		A242	87.99375	Mobile Tx
88.000–108.000	88.000			
	88.800	Guardband, Low Power Sound Broadcasting		
		VHF-FM Sound Broadcasting (Band II)		
		FM110	89.0	
		FM220	100.0	
	100.200			
	100.800	RRD, Wireless Public Address systems		
	100.990	Guardband		
		Land Mobile "B" Band		
		B1	101.0000	Mobile Tx
		B242	104.0125	Mobile Tx
		BX243	104.0250	Simplex
		BX318	104.9625	Simplex
		B1	104.9750	Base Tx
		B242	107.9875	Base Tx
	108.000			
	Draft future plan:			
	88.000			
	88.500	RRD		
	107.500	Sound Broadcasting (FM and/or Digital)		
108.000–137.000	108.000	RRD		
	112.000	Aeronautical ILS Localizers		
	117.975	Aeronautical VOR Beacons		
		Aeronautical Communications (R)		
		ACX1	118.000	
		ACX480	129.975	
	130.000			
		Aeronautical Communications (OR)		
		ARX1	130.025	
		ARX79	131.975	
	132.000			
		Aeronautical Repeater (OR)		
		AR1	132.025	Base Tx
		AR23	132.575	Base Tx
	132.600			
		Aeronautical Communications (OR)		
		ARX80	132.625	
		ARX190	135.375	
	135.400			
		Aeronautical Repeater (OR)		
		AR1	135.425	Mobile Tx
		AR23	135.975	Mobile Tx
	136.000			
137.000–138.000	137.000	Aeronatuical Communications (OR)		
138.000–144.000	138.000	Mobile-Satellite and Meteorological-Satellite, (S-E)		
		Land Mobile "ESB" Band (Emergency Services)		
		ESB1	138.0125	Mobile Tx
		ESB200	140.5000	Mobile Tx
		ESBX1	140.5125	Simplex
		ESBX40	141.0000	Simplex
		ESB1	141-0125	Base Tx
		ESB200	143.5000	Base Tx
		ESBX41	143.5125	Simplex
		ESBX79	143.9875	Simplex
144.000–148.000	144.000			
	148.000	Amateur 2 m Band		
148.000–149.900		Mobile-Satellite Service (E-S)		
149.900–150.050	149.500			
		Radionavigation-Satellite (TRANSIT)		
150.050–156.000	150.050	Mobile-Satellite (E-S)		
		Land Mobile "E" Band		
		ENX1	150.0625	Simplex
		ENX75	150.9875	Simplex
		EN22	151.0125	Base Tx
		EN213	153.4000	Base Tx
		ENX76	153.43125	Simplex
		ENX89	153.59375	Simplex
		EN87	153.60625	Mobile Tx
		EN213	155.18125	Mobile Tx
		EN22	155.19375	Mobile Tx
		EN86	155.99375	Mobile Tx
156.000–162.200	156.000			
		Maritime Mobile "MM" Band		
		MM60	156.025	Mobile Tx
		MM7	156.350	Mobile Tx
		MM67	156.375	Simplex
		MM77	156.875	Simplex
		MM18	156.900	Mobile Tx
		MM91	157.575	Mobile Tx
	157.600			
		Wide-Area Paging "WP" Band		
		WPN1	157.6125	
		WPN37	158.0625	
	158.070			
		Land Mobile "MS" Band (Special Services)		
		MS1	158.0750	Mobile Tx
		MS41	158.5750	Mobile Tx
		MSX1	158.6000	Simplex
		MSX120	160.0875	Simplex
	160.100			
	160.600	Telemetry (160.1–160.3) and Paging (160.3–160.6), RRD		
		Maritime Mobile "MM" Band		
		MM60	160.625	Coast Tx
		MM7	160.950	Coat Tx
	160.970			
		Land Mobile "MS" Band		
		MS1	160.9750	Base Tx
		MS40	161.4750	Base Tx
	161.490			
		Maritime Mobile "MM" Band		
		MM18	161.500	Coast Tx
162.200–174.000	162.200	MM91	162.175	Coast Tx
		Land Mobile "EE" Band		
		EE1	162.2125	Base Tx
		EE279	165.6875	Base Tx
		EEX1	165.7125	Simplex
		Eex55	166.3874	Simplex
	166.400			
		Wide Area Paging "WP" Band		
		WPN38	166.4125	
		WPN68	166.7875	
	166.800			
		Land Mobile "EE" Band		
		EE1	166.8125	Mobile Tx
		EE279	170.2875	Mobile Tx
		EEX88	170.3125	Simplex
		EEX302	172.9875	Simplex
	173.000			
174.000–230.000	174.000	RRD		
		VHF Television Broadcasting (Band III)		
		CHL 4	174–181	
		CHL 5	181–188	
		CHL 6	188–195	
		CHL 7	195–202	
		CHL 8	202–209	
		CHL 9	209–216	
		CHL 10	216–223	
		CHL 11	223–230	
230.000–404.000	230.000			
		230.00–300.00 International Military		
		300.00–305.00 International Military, RRD		
		305.00–328.60 International Military		
		328.60–335.40 Aeronautical ILS Glidepath		
		335.50–380.00 International Military		
	380.000			
		Land Mobile "ESC" Band (Emergency Services) (under negotiation)		
	383.000			
	390.000	383.00–390.00 International Military		
		Land Mobile "ESC" Band (Emergency Services) (under negotiation)		
	393.000			
		393.00–399.90 International Military		
		399.90–400.05 Radionavigation-Satellite (TRANSIT)		
		400.05–400.15 Standard Frequency Satellite		
		400.15–401.00 Meteorological & Met-Satellite (S-E)		
		401.00–404.00 Meteorological		
404.000–430.000	404.000	Fix "IA" Bandff		Alpha Tx
	406.000	Beacon—Satellite Distress Band		
	406.100			
		Land Mobile "TD" Band		
		TD9	406.1125	Mobile Tx
		TD319	409.9875	Mobile Tx
	410.000			
	412.000	Fixed "IB" Band		Alpha Tx
	414.000	Fixed "IA" Band		Beta Tx
		Land Mobile "TD" Band		
		TDX1	414.0125	Simplex
		TDX7	414.0875	Simplex
	414.100			
		Land Mobile "TD" Band		
		TD9	414.1125	Base Tx
		TD319	417.9875	Base Tx
	418.000			
	420.000	Fixed "IB" Band		Beta Tx
	425.000	Fixed "IC" Band		Alpha Tx
430.000–440.000	430.000	Fixed "IC" Band		Beta Tx
440.000–470.000	440.000	Radiolocation, Amateur 70 cm Band		
	448.000	Fixed, Mobile, Radiolocation, Amateur		
	449.000	Radiolocation		
	449.750	Fixed "JC" Band		Simplex
		Land Mobile "C" Band		
		CNX1	449.75625	Simplex
		CNX20	449.99375	Simplex
	450.000	Fixed "JC" Band		Simplex
	450.275			
		Land Mobile "C" Band		
		CN1	450.28125	Mobile Tx
		CN242	453.29375	Mobile Tx
		CNX21	453.30625	Simplex
		CNX46	453.61875	Simplex
	453.625			
	454.975	Fixed "JA" Band		Alpha Tx
		Land Mobile "C" Band		
		CNX47	454.98125	Simplex
		CNX73	455.30625	Simplex

	CN1	455.31875	Base Tx
	CN242	458.33125	Base Tx
458.335			
	Land Mobile "D" Band		
	DNX1	458.34375	Simplex
	DNX16	458.53125	Simplex
458.540			
458.610	Paging, RRD		
	Land Mobile "D" Band		
	DNX17	458.61875	Simplex
	DNX20	458.65625	Simplex
458.665			
	Fixed "JA" Band		Beta Tx
	Fixed "JD" Band		Alpha Tx
	Fixed "JE" Band		Simplex
461.475			
	Land Mobile "D" Band		
	DNX21	461.48125	Simplex
	DNX47	461.80625	Simplex
	DN1	461.81875	Base Tx
	DN240	464.80625	Base Tx
	DNX48	464.81875	Simplex
	DNX77	465.18125	Simplex
465.190			
	Fixed "JF" Band		Simplex
	Fixed "JD" Band		Beta Tx
	Fixed "JG" Band		Simplex
466.675			
	Land Mobile "D" Band		
	DNX78	466.68125	Simplex
	DNX87	466.79375	Simplex
466.800			
466.850	RRD, Telemetry		
	Land Mobile "D" Band		
	DNX88	466.85625	Simplex
	DNX99	466.99375	Simplex
	DN1	467.00625	Mobile Tx
	DN240	469.99375	Mobile Tx
470.000–502.000 470.000			
470.500	RRD (Medical Telemetry only)		
	Land Mobile "F" Band		
	FNX101	470.50625	Simplex
	FNX140	470.99375	Simplex
471.000			
471.500	RRD		
	Land Mobile "F" Band		
	FNX201	471.50625	Simplex
	FNX240	471.99375	Simplex
	FN1	472.00625	Mobile Tx
	FN320	475.99375	Mobile Tx
	FNX301	476.00625	Simplex
	FNX332	476.39375	Simplex
476.400			
	Personal Radio Services "PRS" Band		
	PRS1	476.425	
	PRS40	477.400	
477.425			
	Land Mobile "F" Band		
	FNX401	477.43125	Simplex
	FNX445	477.98125	Simplex
	FN1	477.99375	Base Tx
	FN320	481.98125	Base Tx
	FNX501	481.99375	Simplex
	FNX660	483.98125	Simplex
	FN321	483.99375	Base Tx
	FN640	487.98125	Base Tx
	FNX701	487.99375	Simplex
	FNX861	489.99375	Simplex
	FN321	490.00625	Mobile Tx
	FN640	493.99375	Mobile Tx
	FP1	494.01875	Mobile Tx
	FP279	497.49375	Mobile Tx
	FPX1	497.5125	Simplex
	FPX39	497.9875	Simplex

NOTE: The Spectrum plan shown for 494–518 MHz is draft only and subject to further consideration and consultation.

	FP1	498.0125	Base Tx
	FP279	501.4875	Base Tx
	FPX101	501.5125	Simplex
	FPX139	501.9875	Simplex
502.000–806.000 502.000			
	UHF Television Broadcasting (Bands IV and V)		
	E25	502–510	Block 0
	E26	510–518	
	E27	518–526	Block 1
	E28	526–534	
	E29	534–542	
	E30	542–550	
	E31	550–558	Block 2
	E32	558–566	
	E33	566–574	
	E34	574–582	
	E35	582–590	Block 3
	E36	590–598	(Govt
	E37	598–606	reserved)
	E38	606–614	
	E39	614–622	Block 4
	E40	622–630	(Govt
	E41	630–638	reserved)
	E42	638–646	
	E43	646–654	Block 5
	E44	654–662	
	E45	662–670	
	E46	670–678	
	E47	678–686	Block 6
	E48	686–694	
	E49	694–702	
	E50	702–710	
	E51	710–718	Block 7
	E52	718–726	
	E53	726–734	
	E54	734–742	
	E55	742–750	Block 8
	E56	750–758	
	E57	758–766	
	E58	766–774	
	E59	774–782	Block 9
	E60	782–790	
	E61	790–798	
	E62	798–806	
806.000–890.000 806.000			
	Fixed "KK" Band		Alpha Tx
812.000			
	Land Mobile "ESD" Band (Emergency Services)		
	ESD241	812-0125	Mobile Tx
	ESD280	812.9875	Mobile Tx
813.000			
814.000	Expansion of ES or TS Bands		
	Land Mobile "TS" Band (Trunked Despatch)		
	TS321	814.0125	Mobile Tx
	TS520	818.9875	Mobile Tx
819.000			
824.000	RRD		
825.015	Not allocated (AMPS extension Channels 991–1023)		
	AMPS/DAMPS Cellular Band (Private Management Right)		
	AMPS1	825.030	Mobile Tx
	AMPS666	844.980	Mobile Tx
845.000			
849.000	Alternative pairing with 890–894 MHz for US cellular		
851.000	Not allocated		
857.000	Fixed "KK" Band		Beta Tx
	Land Mobile "ESD" Band (Emergency Services)		
	ESD241	857.0125	Base Tx
	ESD280	857.9875	Base Tx
858.000			
850.000	Expansion for ES or TS Bands		
	Land Mobile "TS" Band (Trunked Despatch)		
	TS321	859.0125	Base Tx
	TS520	863.9875	Base Tx
864.000			
	Cordless Telephone "CT2" Band		
	CT2-1	864.150	
	BS2-40	868.050	
868.100			
	Land Mobile "TX" Band		
	TX1	868.1125	Simplex
	TX37	869.0125	Simplex
869.025			
870.015	Not allocated (AMPS extension channels 991–1023)		
	AMPS/DAMPS Cellular Band (Private Management Right)		
	AMPS1	870.030	Base Tx
	AMPS666	889.980	Base Tx
890.000–960.000 890.000			
	GSM Cellular Band (Private & Crown Management Rights)		
	GSM1	890.200	Mobile Tx
	GSM124	914.800	Mobile Tx
915.000			
921.000	Fixed "K" Band (Studio-Transmitter Links)		
929.000	ISM, RRD, Amateur		
931.700	Fixed "K" Band (Studio-Transmitter Links)		
	Paging "KP" Band		
	KP1	931.7125	
	KP12	931.9875	
932.000			
935.000	Fixed "K" Band (Studio-Transmitter Links)		
	GSM Cellular Band (Private & Crown Management Rights)		
	GSM1	935.200	Base Tx
	GSM124	959.800	Base Tx
960–1427 960.000			
960–1215	Aeronautical Radionavigation		
1215–1240	Radiolocation and Radionavigation		
12.40–1300	Radiolocation and Amateur		
1300–1400	Radiolocation and Radionavigation		
1400–1427	Astronomy and Space Research		
1427–1525 1427			
1427–1465	Fixed "L" Band (Alpha Tx)		
1465–1485	Broadcasting and Broadcasting-Satellite		
1485–1525	Fixed "L" Band (Beta Tx)		

1525–1710	1525	1525–1559 Mobile Satellite (S-E) (incl INMARSAT) 1559–1610 Radionavigation-Satellite (S-E) (eg GPS) 1610–1626.5 Mobile-Satellite (E-S) (see 2483.5 MHz) 1626.5–1660.5 Mobile Satellite (E-S) (incl. INMARSAT) 1660.5–1670 Astronomy, Space Research, & Met Aids 1670–1675 Aeronautical Public Correspondence (APC) 1675–1710 Meteorological-Satellites (S-E) (eg TIROS)
1710–2300	1710	1710–1720 Not allocated 1720–1805 Fixed "M" Band (Alpha Tx) 1805–1810 Not allocated 1810–1895 Fixed "M" Band (Beta Tx) 1895–2300 Fixed "N" Band (Note: Current use of this band is likely to change significantly with the introduction of PCS/MSS and FPLMTS services.)
2300–2396	2300	MDS Band (12 × 8 MHz Private Management Rights)
2396–2500	2396	2396–2400 Amateur 2400–2450 ISM, RRD and Amateur 2450–2483.5 ISM and RRD 2483.5–2500 ISM and Mobile-Satellite (S-E) (see 1610 MHz)
2500–2690	2500	2500–2690 Fixed "O" Band
2690–3400	2690	2690–2700 Astronomy and Space Research 2700–3300 Radiolocation/Navigation (Weather radar) 3300–3400 Radiolocation and Amateur
3400–4200	3400	3400–3600 Fixed "PB" Band and Amateur (3400–3500) 3600–4200 Fixed "P" Band & Fixed-Satellite (S-E) (INTELSAT)
4200–5875	4200	4200–4400 Aeronautical Radionavigation 4400–5000 Fixed "PC" Band 5000–5650 Radiolocation/Navigation (MLS 5000–5250) 5650–5875 Radiolocation, ISM & RRD (5725–5875) & Amateur (5650–5850)
5875–8500	5875	5875–5925 Fixed "RB" Band 5925–6420 Fixed "R" Band & Fixed-Satellite (S-E) (INTELSAT) 6420–7100 Fixed "T" Band 7100–7425 Fixed "V" Band 7425–7730 Fixed "U" Band 7730–8290 Fixed "W" Band 8290–8500 Fixed "Y" Band
8.50–10.50 GHz	8.50	8.50–10.00 Radiolocation/Navigation 10.00–10.50 Radiolocation and Amateur
10.50–13.25	10.50	10.50–10.68 Fixed "H" Band 10.68–10.70 Astronomy and Space Research 10.70–11.70 Fixed "Z" Band 11.70–12.20 Broadcasting Satellite and MDS 12.20–12.50 Fixed "Q" Band and Fixed-Satellite (S-E) 12.50–12.75 Fixed "S" Band and Fixed-Satellite (S-E) 12.75–13.25 Fixed "X" Band
13.25–14.00	13.25	13.25–13.40 Aeronautical Radionavigation 14.30–14.00 Radiolocation
14.00–15.35	14.00	14.00–14.50 Fixed-Satellite (S-E) 14.50–15.35 Fixed "15G" Band
15.35–17.30	15.35	15.35–15.40 Astronomy and Space Research 15.40–15.70 Aeronautical Radionavigation 15.70–17.30 Radiolocation
17.30–23.60	17.30	17.30–17.70 Fixed-Satellite (E-S) 17.70–19.70 Fixed "18G" Band 19.70–21.20 Fixed-Satellite, Mobile-Satellite (S-E) 21.20–23.60 Fixed "23G" Band, Broadcast-Satellite (21.4–22.0)
23.60–25.25	23.60	23.60–24.00 Astronomy and Space Research 24.00–24.05 Amateur 24.05–24.25 Radiolocation, Amateur, ISM (24.125) and RRD 24.25–25.25 Radionavigation 25.25–31.30 Not allocated (LMCS under consideration) 31.30–37.00 Astronomy, Space Research and Radionavigation
37.00–60.00	37.00	37.00–40.00 Fixed "38G" Band
	40.00	40.00–47.00 Not allocated 47.00–47.20 Amateur 47.20–50.40 Not allocated
	50.40	50.40–51.15 Fixed "50G" Band
	41.15	51.15–51.40 Not allocated 51.40–54.25 Space Research 54.25–57.20 Not allocated
	57.20	57.20–58.20 Fixed "60G" Band

NEW ZEALAND TELEVISION BROADCASTING CHANNELS

Channels 1 to 3 are VHF Low Band (Band I—44 to 68 MHz).

Channels 4 to 11 are VHF High Band (Band III—174 to 230 MHz).

Channels 27 to 62 are UHF Band (Band IV and V—518 to 806 MHz).

Transmissions conform to 625 line CCIR System B on VHF and System G on UHF with PAL colour.

The vision carrier frequency is nominally 1.25 MHz above the lower channel edge (an offset between –26 kHz and +26 kHz from the nominal may apply); the rest frequency of the analogue FM sound carrier is 5.4996 MHz above the vision carrier frequency; the centre frequency of the NICAM digital sound carrier (if transmitted) is 5.850 MHz above the vision carrier frequency. The B/G variant of 728 NICAM is used which has a total occupied bandwidth of 510 kHz.

Channel Sound Number	Frequency Limits (MHz)	Vision Carrier (MHz)	FM Sound Carrier (MHz)	NICAM Carrier (MHz)
VHF				
1	45 to 51	45.25	50.75	51.10
2	54 to 61	55.25	60.75	61.10
3	61 to 68	62.25	67.75	68.10
4	174 to 181	175.25	180.75	181.10
5	181 to 188	182.25	187.75	188.10
6	188 to 195	189.25	194.75	195.10
7	195 to 202	196.25	201.75	202.10
8	202 to 209	203.25	208.75	209.10
9	209 to 216	210.25	215.75	216.10
10	216 to 223	217.25	222.75	223.10
11	223 to 230	224.25	229.75	230.10
UHF				
27	518 to 526	519.25	524.75	525.10
28	526 to 534	627.25	532.75	533.10
29	534 to 542	535.25	540.75	541.10
30	542 to 550	543.25	548.75	549.10
31	550 to 558	551.25	556.75	557.10
32	558 to 566	559.25	564.75	565.10
33	566 to 574	567.25	572.75	573.10
34	574 to 582	575.25	580.75	581.10
35	582 to 590	583.25	588.75	589.10
36	590 to 598	591.25	596.75	597.10
37	598 to 606	599.25	604.75	605.10
38	606 to 614	607.25	612.75	613.10
39	614 to 622	615.25	620.75	621.10
40	622 to 630	623.25	628.75	629.10
41	630 to 638	631.25	636.75	637.10
42	638 to 646	639.25	644.75	645.10
43	646 to 654	647.25	652.75	653.10
44	654 to 662	655.25	660.75	661.10
45	662 to 670	663.25	668.75	669.10
46	670 to 678	671.25	676.75	677.10
47	678 to 686	679.25	684.75	685.10
48	686 to 694	687.25	692.75	693.10
49	694 to 702	695.25	700.75	701.10
50	702 to 710	703.25	708.75	709.10
51	710 to 718	711.25	716.75	717.10
52	718 to 726	719.25	725.75	726.10
53	726 to 734	727.25	732.75	733.10
54	734 to 742	735.25	740.75	741.10
55	742 to 750	743.25	748.75	749.10
56	750 to 758	751.25	756.75	757.10
57	758 to 766	759.25	764.75	765.10
58	766 to 774	767.25	772.75	773.10
59	774 to 782	775.25	780.75	781.10
60	782 to 790	783.25	788.75	789.10
61	790 to 798	791.25	796.75	797.10
62	798 to 806	799.25	804.75	805.10

The 20-year management rights for Channels 27 to 34 and 43 to 62 have been sold to a number of television broadcast companies.

Channels 35 to 38 are currently used for Aeronautical Radionavigation (Radar).

Channel 39 is used for Amateur Television and Amateur Narrow Band Modes, see FMTAG Bandplan.

Channel 40 to 42 are used for low power television.

MOUNTAIN RADIO SERVICES IN NEW ZEALAND

In New Zealand the opportunity exists for many to take the hills. To help those who do so there are several Mountain Radio Services who hire lightweight mountain radios for people to communicate back to a town base or to other parties in the field. These mountain radio services are non-profit organizations who just charge sufficient for their services to cover their operating expenses.

The radios are single sideband and operate just below the 80m band on 3261 kHz in the South Island and 3345 kHz in the North Island. Many radios are also equipped to operate on the DoC National Park channels. The radios are used with a longwire half-wave dipole and with careful setting up are capable of communicating with the base stations from anywhere in the country.

The radios may be obtained from the following organizations:

North Island

Northland Mountain Radio Service

Noel Herman, PO Box 1410, Whangarei. Telephone (09) 437-5347 or 025 992-989.

Des Stephens, 2 Riverbend Road, Napier. Telephone (06) 843-8291.

David Walker, 36 Ardrossan Avenue, Hastings Telephone: (06) 879-8548.

Central Nth Is Mountain Radio Service

Peter Dare, 28A Wharenui Road, Rotorua Telephone: (07) 345-6469. Fax: 07-347-5507

John Hodgkinson, 60 Atkinson Road, Te Awamutu. Telephone/Fax: (07) 872-7829.

Travers Moffit, Pohangina Valley West Road, Ashhurst. Telephone: (06) 350-8250.

Wellington Mountain Radio Service

Email: <wmrsinc@quanby.com>.

PO Box 30-519, Lower Hutt.

Hutt Valley: Bob Sewell. Telephone: (04) 564-6929. Collect sets at Dwights Canvas Great Outdoors Centre, 85 Queens Drive, Lower Hutt. Telephone (04) 570-0359.

Wellington: Bruce or Kerry Popplewel. Telephone: (04) 479-2144. Collect sets at Mainly Tramping, Ground Floor, Grand Arcade, 16 Willis Street. Telephone: (04) 473-5353.

Masterton: Colin Coutts, 12 Paierau Road. Telephone: (06) 344-0426 or Neil Richardson, 129 High Street. Telephone: (06) 377-0987. Fax: (03) 377-0347.

Otaki: Maurice Perry, 66 Otaki Gorge Road. Telephone: (06) 364-8441.

Palmerston North: Hugh Wilde. Telephone: (06) 356-9450. Collect sets at Mountain Equipment,14 The Square, Palmerston North. Telephone: (06) 359-2162.

Wanganui: Darryl Greeks, 15 Liverpool Street. Telephone: (06) 345-6624.

South Island

Marlborough Mountain Radio Service

Paul Rennie, 64 Park Terrace, Blenheim. Telephone: (03) 578-5311.

Paul Rennie, 4 Sutton Street, Nelson. Telephone (03) 544-7085.

Canterbury Mountain Radio Service

Christchurch: Paul White. Telephone/Fax (03) 379-7905 or 021 365-618. Email: <paul@mountainradio.co.nz>. C/- Ballingers Hunting & Fishing, 173 Montreal Street, Christchurch.

DOC Te Anau & Wanaka (Fiordland & Mt Aspiring NationalParks)

Methven: Alan Hepburn, 71 Main Road, Methven. Telephone: (03) 302-8410 (home).

Hokitika: Sam Meldrum, 135 Brittan Street, Hokitika. Telephone/Fax: (03) 755-6135. Email: <sam@mountainradio.co.nz>.

Dunedin: Martin Balch and Fiona. Telephone: (03) 454-3262. Mobile: 025 375-242. Fax: (03) 454-3223. Email: <martin@mountainradio.co.nz>. 23 Connel Street, Wavely, Dunedin.

Nelson: Greg Pickford, 4 Sutton Street, Richmond. Telephone: (03) 544-7085.

Takaka: Derry Kingston, RD1, Takaka. Telephone/Fax: (03) 525-9576.

Wanaka: Department of Conservation. Telephone (03) 443-7660. Visitor Centre, Wanaka.

Southland Field Radio

Southland Mountain Radio has a second channel fitted to all radios—DOC

Te Anau & Wanaka (Fiordland & Mt Aspiring NationalParks)

Ray Phillips, Mill Road South No. 1 RD, Invercargill. Telephone/Fax: (03) 216-3751. E-mail: <rkphillips@xtra.co.nz>. Stewart Burnby, Stewis Place, Caswell Road, Te Anau. Telephone: (03) 249-8363.

The Mountain Radio Service is the only public communication system for backcountry users. It is reliable, and effective. Follow instructions carefully and take care of the radio it could save your life!

Contact with the base stations is made at fixed schedule times in the evening, these times will be available from your radio supplier or with some suppliers a phone patch facility is available on an on demand basis.

At scheduled times weather forecasts and messages are relayed to the field radio. It is not unusual to have 30 or more stations on the nets.

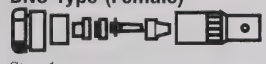
The type of radio varies widely dependent on the supplier and type of service provided.

The Mountain Radio Services have been in operation now for over 25 years and it is recommended that those persons venturing into the mountains carry a mountain radio.

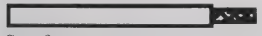
AT SEA SAFETY IS NO ACCIDENT—CHECK YOUR EQUIPMENT

COAXIAL PLUG ASSEMBLY

BNC Type (Female)

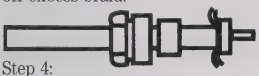


Step 1:
Cut end of cable evenly and remove 8 mm of outer sheat.



Step 2:
Side clamp nut and pressure sleeve over cable, and comb out braid.

Step 3:
Fold braid back and insert ferrule between braid and dielectric. Trim off excess braid.

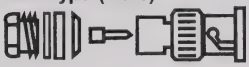


Step 4:
Remove 5 mm of dielectric without damaging centre conductor. Tin conductor.

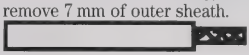
Step 5:
Slide rear insulator over conductor hard against rear insulator. Solder contact to conductor.

Step 6:
Fit front insulator in body and push sub-assembly onto body. Slide pressure sleeve into body and screw in the clamp nut to clamp cable.

BNC Type (Male)



Step 1:
Cut end of cable evenly, and remove 7 mm of outer sheath.

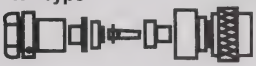


Step 2:
Slide clamp-nut, washer and rubber spacer over cable. Slide pressure sleeve over braid, and fan out braid.

Step 3:
Fold back braid against pressure sleeve and trim off excess. Strip 4 mm of inside insulation off centre wire. Solder pin onto centre wire.

Step 4:
Fit assembly, pin first, into main receptacle. Push washer, rubber spacer and clamp nut up and screw into place.

"N" Type



Step 1:
Cut end of cable evenly and remove 9 mm of outer sheath.

Step 2:
Slide clamp nut and pressure sleeve over cable, and comb out braid.

Step 3:
Fold braid back and insert ferrule between braid and dielectirc. Trim off excess braid and remove 5.5 mm dielectric without damaging inner conductor. Tin end of conductor.

Step 4:
Slide rear insulator over conductor and position against end of dielectric. Slide contact over conductor until hard against rear insulator. Solder contact to conductor.

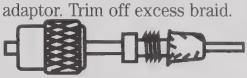
Step 5:
Fit front insulator in body and push sub-assembly into body. Slide pressure sleeve into body and screw in the clamp nut to clamp cable.

UHF Type

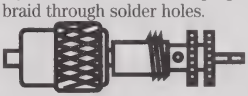
Step 1:
Cut end of cable evenly and remove 27 mm of outer sheath.

Step 2:
Slide coupling ring and adaptor onto sheath. Fan braid back over sheath.

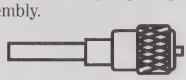
Step 3:
Compress braid around cable and position adaptor so braid fans over adaptor. Trim off excess braid.



Step 4:
Remove 12.5 mm dielectric and tin conductor. Screw the plug assembly onto cable and solder plug to braid through solder holes.



Step 5:
Solder conductor to centre pin and screw coupling ring onto assembly.



COAXIAL CABLE SPECIFICATIONS

Type	Nom. Imp Zo	Outer Dia (mm)	Nominal Attenuation (dB/100 m) 50 MHz	100 MHz	200 MHz	400 MHz	1 GHz	Vel Factor %	Cap pF/m	Volts Vrms
RG-8/U	52	10.3	5.2	7.2	10.5	15.4	29.2	66.0	96.8	5000
RG-9/U	51	10.67	5.2	7.2	10.5	15.4	29.2	66.0	67.3	5000
RG-11/U	75	10.29	4.3	6.6	9.5	13.8	22.3	66.0	67.3	5000
RG-58/U	53.5	4.95	10.2	14.8	22.3	32.8	55.8	66.0	93.5	1900
RG-58A/U	50	4.95	10.8	16.1	23.9	37.7	70.5	66.0	101.0	1900
RG-58C/U	50	4.95	10.8	16.1	23.9	37.7	70.5	66.0	101.0	1900
RG-59/U	73	6.15	7.9	11.2	16.1	23.3	39.4	66.0	68.9	2300
RG-59B/U	75	6.15	7.9	11.2	16.1	23.0	39.4	66.0	67.3	2300
RG-62/U	93	6.04	6.2	8.9	12.5	17.7	28.5	84.0	44.3	700
RG-62B/U	93	6.15	6.6	9.5	13.8	20.0	36.1	84.0	44.3	700
RG-122/U	50	4.06	14.8	23.0	32.8	49.9	87.0	66.0	101.0	1900
RG-141A/U	50	4.06	6.9	10.5	15.4	22.6	41.7	69.5	95.1	1900
RG-142B/U	50	4.95	8.9	12.8	18.4	26.9	44.3	69.5	95.2	1900
RG-174/U	50	2.56	21.7	29.2	39.4	57.4	98.4	66.0	101.0	1500
RG-178B/U	50	1.83	34.4	45.9	62.3	91.9	150.9	69.5	95.1	1000
RG-178B/U	75	2.54	27.9	32.8	41.0	52.5	78.7	69.5	64.0	1200
RG-180B/U	95	3.56	15.1	18.7	24.9	35.1	55.8	69.51	49.2	1500
RG-187A/U	75	2.66	37.9	32.8	41.0	52.5	78.7	69.5	64.0	1200
RG-188A/U	50	2.59	31.5	37.4	46.6	54.8	101.7	69.5	95.2	1200
RG-196A/U	50	1.93	34.4	45.9	62.3	91.9	150.9	95.2	1200	
RG-213/U	50	10.29	5.2	7.2	10.5	15.4	29.2	66.0	101.0	5000
RG-214/U	50	10.8	5.2	7.2	10.5	15.4	29.2	66.0	101.0	5000
RG-223/U	50	5.38	10.1	14.8	21.0	30.2	63.5	66.0	101.0	1900
RG-303/U	50	4.31	6.9	10.5	15.4	22.6	42.7	69.5	95.2	1900
RG-316/U	50	2.49	30.8	34.1	43.3	54.1	101.7	69.5	95.2	1200
BEL 9913	50	10.29	3.0	4.5	5.9	8.5	14.8	84.0	78.7	—

NB: Except for Belden 9913, all specifications are referenced to MIL-C-17D/F or JAN-C-17A as applicable.

COMMONLY USED SYMBOLS AND ABBREVIATIONS

A

A	ampere, amplification factor
AC	alternating current
A/D	analogue-to-digital
AF	audio frequency
afc	automatic frequency control
afsk	audio frequency shift keying
agc	automatic gain control
Ah	ampere hour
alc	automatic load (or level) control
AM	amplitude modulation
a.m.	morning
AMSAT	Radio Amateur Satellite Corporation
AMTOR	Amateur Teleprinting Over Radio
anl	automatic noise limiter
ant	antenna
AOS	acquisition of signal
ARA	Amateur Radio Association
ARC	Amateur Radio Club
AREC	Amateur Radio Emergency Corps
ARS	Amateur Radio Society; Amateur Radio Station
ASCII	American National Standard Code for Information Interchange
ATV	amateur television
avc	automatic volume control
AWG	American wire gauge
az-el	azimuth-elevation

B

B	flux density; susceptance
BASIC	Beginner's All-purpose Symbolic Instruction Code (computer language)
b	byte (a group of bits or binary digits, usually eight)
bc	broadcast
BCD	binary-coded-decimal
BCI	broadcast interference
bcl	broadcast listener
bd	baud (bits/sec)
ber	bit error rate
bit	binary digit
BFO	beat-frequency oscillator
bpf	band pass filter
bw	bandwidth
byte	computer word, 8 bits

C

C	Celsius, capacity, Coulomb
c	velocity of EM waves
CATV	cable television
CB	citizens band
CCIR	International Radio Consultative Committee
CCIT	Consultative Committee for International Telegraph and Telephone (ITU)
CCS	constant current source
cctv	closed circuit television
ccw	coherent CW; counter-clockwise
CD	Civil Defence
Ch	channel
cm	centimetre
CMOS	(or COSMOS)—complimentary-symmetry metaloxide semiconductor
coax	coaxial cable or connector
COR	carrier-operated relay
CPU	central processing unit
CQ	general call to all stations
CRT	cathode-ray tube
ct	centre tap
CTCSS	continuous tone coded squelch system
CW	continuous wave (code); clockwise

D

D	electrostatic displacement; flux density
D/A	digital-to-analogue
dB	decibel
dBd	antenna gain referenced to a dipole
DBDM	double-balance diode mixer
dBi	antenna gain referenced to an isotropic, a dipole has a gain of 2.14 dBi
dBm	decibel referred to 1 milliwatt
dBW	decibel referred to 1 watt
DC	direct current
det	detector
DF	direction finder; direction finding
DIP	dual-in-line package, 14 to 16 pins
dpdt	double-pole double-throw
dpst	double-pole single-throw
dsb	double sideband
DTL	diode-transistor logic
DTMF	dual tone multi-frequency
DVM	digital voltmeter
DX	long distance
DXCC	DX Century Club

E

E	voltage
e	base of Naperian logs
ECL	emitter-coupled logic
ECO	electron-coupled oscillator
EHF	extra high frequency (30– 300 GHz)
EHT	extra high tension
eirp	effective isotropic radiated power
EMC	electro-magnetic capability
E-M-E	earth-moon-earth (moonbounce)
emf	electromotive force (voltage)
EMI	electro-magnetic interference
EMP	electromagnetic pulse
EPROM	erasable programmable read-only memory
EUV	extreme ultra-violet radiation
EQX	equator crossing
erp	effective radiated power

F

f	frequency
F	farad; Fahrenheit
FAX	facsimile
FCC	Federal Communications Commission
FD	Field Day
FET	field-effect transistor
FF	flip-flop
FM	frequency modulation
FMT	frequency measuring test
FMTAG	Frequency Management Technical and Advisory Group
fot	optimum working frequency
fsd	full scale deflection
FSK	frequency-shift keying

G

g	gram
G	giga (109); conductance; magneto motive force
GaAs FET	gallium arsenide field-effect transistor
GDO	grid-dip or gate-dip oscillator
GHz	gigahertz
gnd	ground
GPRS	General Packet Radio Service
GPS	Global Positioning System
GSM	Globa System for Mobile Systems

H

H	henry; magnetic field strength
HAAT	height above mean terrain
HF	high frequency (3–30 MHz)
HFO	heterodyne-frequency oscillator
hpf	highest possible frequency; high pass filter
HT	high tension
Hz	hertz

I

I	current
IARU	International Amateur Radio Union
IC	integrated circuit
i-d	identification; identifier
ID	inside diameter
IF	intermediate frequency
IMD	inter-modulation distortion
I/O	input/output
IRC	international reply coupon
ISB	independent sideband
ITU	International Telecommunication Union
IW	Intruder Watch (Monitoring Service)

J

J	Joule
j	indicator for reactive component of an impedance; (+j inductive; –j capacitive); joule
JFET	junction field-effect transistor

K

k	kilo (1000)
K	kilobyte; specific inductive capacity; Kelvin; dielectric constant
kg	kilogram
kHz	kilohertz (10^3)
km	kilometre
kV	kilovolt
kW	kilowatt
kWh	kilowatt hour

L

L	self inductance
LC	inductance-capacitance
LCD	liquid crystal display
LED	light-emitting diode
LF	low frequency (30–300 kHz)
lhcp	left-hand circular polarisation
LO	local oscillator
loran	long-range navigation
LOS	loss of signal
lp	long periodic; long path
LSB	lower sideband; least signifcant bit
LSI	large-scale integration
LT	low tension
luf	lowest usable frequency
lw	longwave; long wire

M

m	metre (distance or band); milli (10^{-3}); mass
M	mega (10^{6}); mutual inductance
mA	milliampere (one-thousandth of an Amp)
mAH	milliampere hour
MARS	Military Affiliate Radio System
MATV	multi-access television
MF	medium frequency (300–3000 kHz)
mH	millihenry
MHz	megahertz (106)
mike; mic	microphone
mini-DIP	dual-in-line package of 8 pins
mi/h	miles per hour
mi/s	miles per second
mix	mixer
mm	millimetre
MO	master oscillator
MOS	metal oxide semiconductor
mod	modulator
modem	modulator/demodulator
MOX	manually operated switching
ms	millisecond
m.s.	meteor scatter
m/s	metres per second
MSB	most significant bit
MSI	medium-scale integration
MSTV	medium-scan television
MUF	maximum usable frequency
MUX	multiplex; multiplexer
mV	millivolt
mW	milliwatt

N

N	modulation factor
n	nano (10–9)
nbfm	narrow-band frequency modulation
nbvm	narrow-band voice modulation
n.c.	no connection
NC	normally closed
NF	noise figure
NiCad	nickel cadmium
NL	noise limiter
NMOS	n-channel MOS
NO	normally open
npn	negative-positive-negative
nS	nanosecond
NZART	New Zealand Association of Radio Transmitters

O

OD	outside diameter
OM	old man
op amp	operational amplifier
osc	oscillator
OSCAR	Orbiting Satellite Carrying Amateur Radio
OTC	Old Timers' Club
oz	ounce

P

p	pico (10–12)
P	power
PA	power amplifier; public address system
PAM	pulse amplitude modulation
PCB	printed (or etched) circuit board
PCM	pulse code modulation
PEP	peak envelope power
pF	picofarad
ph	phone
PIN	positive intrinsic negative
PIV	peak inverse voltage
pk	peak
pk-pk	peak to peak
PLL	phase-locked loop
PM	phase modulation
p.m.	afternoon/night
PMOS	p-channel MOS
pnp	positive-negative-positive
ppi	plan position indicator (radar)
pot	potentiometer
PROM	programmable read-only memory
PRV	peak reverse voltage
PSK	phase-shift keying
PTO	permeability-tuned oscillator
PTT	push-to-talk
PSU	power supply unit

Q

Q	figure of merit (tuned circuits); charge; quantity
QRP	low power (less than 10 watts input)
QTHR	address correct in *Call Book*

R

R	resistance
RAM	random access memory
R/C	radio control
R-C	resistor-capacitor
rcvr	receiver
rev/min	revolutions per minute
RF	radio frequency
RFC	radio-frequency choke
RFI	radio-frequency interference
rhcp	right-hand circular polarisation
RI	Radio Inspector
RIT	receiver incremental tuning
RLC	resistor, inductance, capacitor network
rms	root-mean-square
RO	Radio Officer
ROM	read-only memory
rptr	repeater
RS	Radiosport Satellite (USSR)
RSGB	Radio Society of Great Britain
RST	readability-strength-tone
RT	radiotelephone
RTL	resistor-transistor logic
RTTY	radioteletype
Rx	receiver

S

S	second; magnetic reluctance; Siemens
SAE	self-addressed envelope
SASE	stamped SAE
SCR	silicon-controlled rectifier
SHF	super-high frequency (3–30 GHz)
SINAD	Ratio of Signal to Noise and Distortion
SM	silver mica (capacitor)
SNR; S/N	signal-to-noise ratio
spdt	single-pole double-throw
spst	single-pole single-throw
SS	sweepstakes; spread spectrum
SSB	single sideband
SSC	AMSAT Phase III special service channels
SSI	small-scale integration
SSTV	slow-scan television
STSP	short-term special purpose (FM repeaters)
SWL	shortwave listener
SWR	standing-wave ratio
sync	synchronous; synchronising
SYNCART	synchronous satellite carrying Amateur Radio Transponder

T

t	time; temperature C
T	period; temperature K
TA	technical adviser
TCA	time of closest approach
TE	trans-equatorial (propagation)
tfc	traffic
THz	tetrahertz (1012)
THD	total harmonic distortion
tpi	turns per inch
T-R	transmit-receive
TTL; T2L	transistor-transistor logic
TTY	teletypewriter (from Teletype, the trade mark of Teletype Corporation)
TV	television
TVI	television interference
Tx	transmitter

U

UHF	ultra-high frequency (300–3000 MHz)
UJT	uni-junction transistor
UoSAT	University of Surrey educational/research satellite (Great Britain)
USB	upper sideband
UTC	Universal Co-ordinated Time
uV	ultra-violet light

V

V	volt; voltage
VA	Volt-Ampere
VCO	voltage-controlled oscillator
VCR	video cassette recorder
VCXO	voltage-controlled crystal oscillator
VFBO	variable-frequency beat oscillator
VFO	variable frequency oscillator
VHF	very-high frequency (30–300 MHz)
VLSI	very large scale integration
VOM	volt-ohm-milliammeter
VOX	voice-operated switching
VR	voltage regulator
VSWR	voltage standing-wave ratio
VTVM	vacuum-tube voltmeter
VU	volume unit
VXO	variable crystal oscillator

W

W	watt; work
WAC	Worked All Continents
WARC	World Administrative Radio Conference
WAS	Worked All States
wbfm	wide-band FM
Wh	watt-hours
wpm	words per minute
ww	wire wound; wire wrap
wx	weather

X

X	reactance; electrostatic field strength
xcvr	transceiver
XO	crystal oscillator
xfmr	transformer
xmtr	transmitter
xtal	crystal
XYL	wife

Y

Y	admittance
YF	wife
YL	young lady or lady operator

Z

Z	impedance; UTC time

Conversion Factors (Metric-Imperial)

1 millimetre (mm)	= 0.03937 inch
1 centimetre (cm) = 10mm	= 0.3937 inch
1 metre (m) = 100cm	= 39.37 inches, 3.28 feet, 1.094 yards
1 kilometre (km) = 1000m	= 3280.8 feet, 1094 yards, 0.621 miles
1 gram (g) = 1000mg	= 0.03574 ounces
1 kilogram (kg) = 1000g	= 2.2046 pounds
1 tonne (t) = 1000kg	= 0.98 ton, 2204.6 pounds
1 cubic centimetre (cm^3) = 1000mm^3	= 0.6102 cubic inches
1 cubic metre (m^3)	= 35.3 cubic feet, 1.3 cubic yards
1 litre (l)	= 0.220 imperial gallons, 0.264 US gallons
1 kilopascal (kP)	= 0.145 lbs/sq. inch, 0.009867 atmospheres
1 kilojoule (kJ)	= 0.948 BTU, 0.239 kilocalories, 737.56ft/lb
1 kilowatt (kW)	= 1.34 horsepower, 73.7ft.lb/sec
1 Newton (N)	= 0.2248lb force
1 Tesla (T)	= 10,000 gauss
1 Weber (W)	= 10^8 Maxwell

Prefixes for Multiples and Sub-multiples of Quantities

Multiple or Sub-multiple	Name	Prefix
10^{12}	Tera	T
10^9	Giga-	G
10^6	Mega-	M
10^3	Kilo-	k
10^2	Hecto	h
10	Deca	da
10^{-1}	Deci	d
10^{-2}	Centi-	c
10^{-3}	Milli-	m
10^{-6}	Micro-	µ
10^{-9}	Nano-	n
10^{-12}	Pico-	p
10^{-15}	Femto	f
10^{-18}	Atto-	a

Preferred Number Series

(a) 10% Tolerance E12

10	12	15	18	22	27	33	39	47	56	68	82

(b) 5% Tolerance E24

10	11	12	13	15	16	18	20	22	24	27	30
33	36	39	43	47	51	56	62	68	75	82	91

DC resistance of conducting materials relative to copper

Material	Resistance Ratio	Material	Resistance Ratio
Aluminium	1.6	Nichrome	63.0
Brass	3.8	Nickel	4.1
Cadmium	4.1	Phosphor Bronze	6.7
Chromium	12.0	Platinum	6.4
Copper	1.0	Silver	0.97
Gold	1.4	Stainless Steel	43.0
Iron	5.9	Tin	6.6
Lead	12.0	Zinc	3.6

Useful Formulae

- Wavelength (in metres)
  Free space = 300/f(MHz)
  Half-wave wire dipole = 143/f(MHz)
- Resonant frequency of an LC circuit
  $f = 0.159155/\sqrt{(LC)}$
- The quality factor or Q of a circuit at resonance is
  $Q = 2\pi f\ L/r$
- The 3 dB bandwidth of such a single tuned circuit
  B = f(res)/Q
- Estimate of transformer rating
  Output = 31 A^2 Watts
  where A = core cross-section in sq.ins.
  or Output = 4.8 A^2 Watts if A is in sq.cm.

Ohms Law

$V = IR = W/I = \sqrt{WR}$
$I = V/R = W/V = \sqrt{W/R}$
$R = V/I = V^2/W = W/I^2$
$W = VI = I^2\ R = V^2/R$

Mains Plug Wiring

Phase	Brown	Red
Neutral	Blue	Black
Earth	Green/Yellow	Green

Average, Peak, RMS Values

	Multiplication factor for sine wave			
	Average	RMS	Peak	Peak-Peak
Average	—	1.1133	1.573	3.143
RMS	0.933	—	1.414	2.828
Peak	0.637	0.7073	—	2.033
Peak-Peak	0.323	0.3535	0.533	—

Colour Codes

Tantalum Capacitors

Top/Middle band: Value in µF (2 digits)

Middle Spot: Multiplier

Bottom band: Maximum voltage

Colour	Value	Multiplier	Voltage
Black	0	×1	10.0
Brown	1	×10	1.6
Red	2	×100	0.4
Orange	3	×1k	40.0
Yellow	4	×10k	6.3
Green	5	×100k	16.0
Blue	6		20.0
Violet	7	×0.0001	
Grey	8	×0.01	25.0
White	9	×0.1	2.5

Capacitors

Top band: First digit of value
Second band: Second digit of value (gives value in pF)

Third band: Multiplier

Fourth band: Tolerance—White 10%, Black 20%

Bottom Band: Voltage

Resistors

Bands from closest to lead:

First digit of value

Second digit of value

Multiplier

Tolerance

Colour	Value	Multiplier	Tolerance
Black	0	×1	
Brown	1	×10	1%
Red	2	×100	2%
Orange	3	×1 k	
Yellow	4	×10 k	
Green	5	×100 k	
Blue	6	×1 M	
Violet	7	×10 M	
Grey	8		
White	9		
Gold			5%
Silver			10%
No band			20%

Notes

1. 1% tolerance resistors have five bands. The first three give three digits of value, the rest as above.
2. Bands are closer to one end of the resistor. Read bands in sequence from this end.

Hexadecimal Constants

Hex Code	Most Significant Bytes		Least Significant Bytes	
0	0	0	0	0
1	4096	256	16	1
2	8192	512	32	2
3	12288	768	48	3
4	16384	1024	64	4
5	20480	1280	80	5
6	24567	1536	96	6
7	28672	1792	112	7
8	32768	2048	128	8
9	36864	2304	144	9
A	40960	2560	160	10
B	45056	2816	176	11
C	49152	3072	192	12
D	53348	3328	208	13
E	57344	3584	224	14
F	61440	3840	240	15

HEX TO DECIMAL CONVERSION
Decimal Value = IV + III + II + I

ASCII Character Codes as defined in ANSI X3.4

Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char	Dec	Hex	Char
0	0	NUL	32	20	SPACE	64	40	@	96	60	—
1	1	SOH	33	24	!	65	41	A	97	61	a
2	2	STX	34	22	“	66	42	B	98	63	b
3	3	ETX	35	34	#	67	43	C	99	63	c
4	4	EOT	36	24	$	68	44	D	100	64	d
5	5	ENQ	37	25	%	69	45	E	101	65	e
6	6	ACK	38	26	&	70	46	F	102	66	f
7	7	BEL	39	27	‘	71	47	G	103	67	g
8	8	BS	40	28	(	72	48	H	104	68	h
9	9	HT	41	29	)	73	49	I	105	69	i
10	A	LF	42	2A	*	74	4A	J	106	6A	j
11	B	VT	43	2B	+	75	4B	K	107	6B	k
12	C	FF	44	2C	,	76	4C	L	108	6C	l
13	D	CR	45	2D	-	77	4D	M	109	6D	m
14	E	SO	46	2E	.	78	4E	N	110	6E	n
15	F	SI	47	2F	/	79	4F	O	111	6F	o
16	10	DLE	48	30	0	80	50	P	112	70	p
17	11	DC1	49	31	1	81	51	Q	113	71	q
18	12	DC2	50	32	2	82	52	R	114	72	r
19	13	DC3	51	33	3	83	53	S	115	73	s
20	14	DC4	52	34	4	84	54	T	116	74	t
21	15	NAK	53	35	5	85	55	U	117	75	u
22	16	SYN	54	36	6	86	56	V	118	76	v
23	17	ETB	55	37	7	87	57	W	119	77	w
24	18	CAN	56	38	8	88	58	X	120	78	x
25	19	EM	57	39	9	89	59	Y	121	79	y
26	1A	SUB	58	3A	:	90	5A	Z	122	7A	z
27	1B	ESC	59	3B	;	91	5B	[	123	7B	{
28	1C	FS	60	3C	<	92	5C	\	124	7C	|
29	1D	GS	61	3D	=	93	5D	]	125	7D	}
30	1E	RS	62	3E	>	94	5E	→	126	7E	–
31	1F	US	63	3F	?	95	5F	_	127	7F	DEL

ASCII Control Codes

NUL	(Ctrl @)	Null	DLE	(Crtl P)	Data Link Escape
SOH	(Ctrl A)	Start of Heading	DC1	(Ctrl Q)	Device Control 1
STX	(Ctrl B)	Start of Text	DC2	(Ctrl R)	Device Control 2
ETX	(Ctrl C)	End of Text	DC3	(Ctrl S	Device Control 3
EOT	(Ctrl D)	End of Transmission	DC4	(Ctrl T)	Device Control 4
ENQ	(Ctrl E	Enquiry	NAK	(Ctrl U)	Negative Acknowledge
ACK	(Ctrl F)	Acknowledge	SYN	(Ctrl V	Synchronous Idle
BEL	(Ctrl G)	Bell	ETB	(Ctrl W)	End of Transmission Block
BS	(Ctrl H)	Back Space	CAN	(Ctrl X)	Cancel
HT	(Ctrl I)	Horizontal Tab	EM	(Ctrl Y)	End of Medium
LF	(Ctrl j)	Line Feed	SUB	(Ctrl Z)	Substitute
VT	(Ctrl K)	Vertical Tab	ESC	(Ctrl [)	Escape
FF	(Ctrl L)	Form Feed	FS	(Ctrl \)	File Separator
CR	(Ctrl M)	Carriage Return	GS	(Ctrl])	Group Separator
SO	(Ctrl N)	Shift Our	RS	(Ctrl ^)	Record Separator
SI	(Ctrl O)	Shift In	US	(Ctrl _)	Unit Separator

The RS-232C Interface

The basic RS-232C Electrical specifications

Communication rate:
0–20,000 bits per second

Driver output voltage levels, maximum no load:
–25 V logic 1, + 25 V logic Ø

Driver output voltage ranges for loads between 3 k and 7 k Ohms:
Logic 1: –15 V (7 k) and –5 V (3 k)
Logic Ø: + 15 V (7 k) and + 5 V (3 k)

Driver output current, short circuit:
500 mA maximum

Driver output impedance with power off:
300 Ω minimum

Maximum driver output slew rate:
30 V per microsecond

Receiver input resistance:
7 kΩ maximum
3 kΩ minimum

Effective receiver input capacitance:
2500 pF maximum

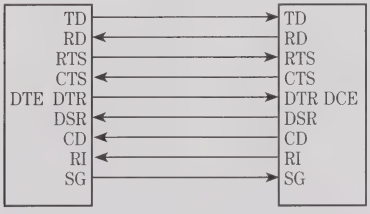
Maximum receiver input voltage range:
– 25 V to + 25 V

The following table shows the nine most common signals used for serial communications and their PIN allocations for nine and 25 PIN connectors:

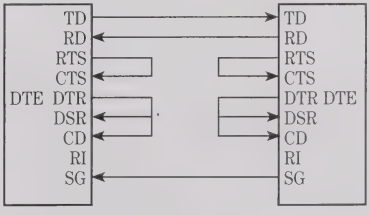
Signal Name		PIN No. (9 pin)	PIN No. (25 pin)
TD	Transmitted Data	3	2
RD	Received Data	2	3
RTS	Request To Send	7	4
CTS	Clear To Send	8	5
DSR	Data Set Ready	6	6
SG	Signal Ground	5	7
CD	Carrier Detect	1	8
DTR	Data Terminal Ready	4	20
RI	Ring Indicator	9	22

Common RS-232C Connections

Each signal (except ground) is either an input or an output depending whether it is on the Data Terminal Equipment (DTE) (eg, a computer terminal) or the Data Circuit Terminating Equipment (DCE) (eg, a modem). A typical connection is shown below.



When two computer terminals (DTEs) are connected together, a “null modem” hook-up is needed to fool each DTE into thinking that it is connected to DCE. A typical null modem connection is shown below.



BASIC AND DERIVED SI UNITS—CONVERSION FACTORS

Basic SI Units

Quantity	Name of unit	Unit symbol
Electric current	ampere	A
Length	metre	m
Luminous intensity	candela	cd
Mass	kilogramme	kg
Thermodynamic temperature	degree Kelvin	°K
Time	second	s

Derived SI Units

Physical quantity	SI unit	Unit symbol
Electric capacitance	farad	F = A s/V
Electrical charge	coulomb	C = A s
Electrical potential	volt	V = W/A
Electric resistance	Ohms	Ω = V/A
Force	Newton	N = kg m/s^2
Frequency	Hertz*	HZ = s^{-1}
Illumination	lux	lx = lm/m^2
Inductance	Henry	H = V s/A
Luminous flux	lumen	lm = cd sr
Magnetic flux	Weber	Wb = V s
Magnetic flux density	Tesla†	T = Wb/m^2
Power	Watt	W = J/s
Work energy, quantity of heat	joule	J = N m

*Hertz is equivalent to cycle per second.
†Tesla is equivalent to Weber per square metre.

Conversion factors

To convert	into	Multiply by	Conversely
Amp hours	Coulombs	3600	2.778×10^{-4}
Atmospheres	Lb/sq.in	14.70	0.068
Centigrade	Kelvin	°C+273 = °K	°K – 273 = °C
Cubic inches	Cubic feet	5.787×10^{-4}	1728
Cubic inches	Cubic metres	1.639×10^{-5}	6.102×10^{4}
Degrees	Radians	1.754×10^{-2}	57.3
Dynes	Pounds	2.248×10^{-6}	4.448×10^{5}
Ergs	Foot pounds	7.376×10^{-8}	1.356×10^{7}
Feet	Centimetres	30.48	3.281×10^{-2}
Foot pounds	Kilowatt hours	3.766×10^{-7}	2.655×10^{6}
Gausses	Lines per sq.in.	6.452	0.155
Grams	Dynes	980.7	1.02×10^{3}
Grams per cm	Pounds per in	5.6×10^{-3}	178.6
Horsepower	Kilowatts	0.746	1.341
Inches	Centimetres	2.54	0.3937
Kilograms	Pounds (lb)	2.205	0.454
Kilometres	Feet	3281	3.048×10^{-4}
Kilometres	Nautical miles	0.540	1.853
Kilometres	Statute miles	0.621	1.609
Kilowatt hours	Joules	3.6×10^{6}	2.778×10^{-7}
Kilowatt hours	HP hours	1.341	0.7457
Knots	Miles per hour	1.1508	0.869
Lamberts	Candles per sq.cm	0.3183	3.142
Lamberts	Candles per sq.in	2.054	0.4869
Lumens per sq.ft	Foot candles	1	1
Lux	Foot candles	0.092892	10.764
Metres	Feet	3.28	10.764
Metres	Yards	1.094	0.9144
Miles per hour	Feet per second	1.467	0.68182
Nepers	Decibels	8.686	0.1151
Tons	Pounds	2240	4.464×10^{-4}
Watts	Ergs per second	10^{7}	10^{-7}

Ten Most Common Tower Building Mistakes

by STEVE MORRIS K7LXC

After working on over 100 amateur radio tower and antenna systems over the last 15 years, I have seen many problems and failures that could have, and should have, been avoided. By not making these mistakes, you can make your tower and antenna system safer and more reliable. It'll even let sleep at night better.

1. Not following the manufacturer's specifications

Commercially manufactured towers have to comply with current standards for wind loading and structural integrity. Licensed Professional Engineers (PEs) design the towers and make the calculations to make them safe. If you don't follow their specs at a minimum, the tower will not take the stresses and loads that it is subject to. In other words, it'll probably fail.

2. Overloading

This is the most common reason for amateur tower failure. The first thing you need to know to plan and build a tower and antenna system is what the wind speed rating for your country is. Next, you need the manufacturer's specifications for that wind speed. Then you must not exceed the wind load rating based on these factors. This is even more important for crank-up towers. Refer also to number 1.

3. Underestimating wind forces

Wind pressure on a tower and antenna can be tremendous. Unless you've been up on a tower during a windstorm to feel the pressure and the forces, it's difficult to appreciate how significant they are. Increases in wind pressure are not linear, they are geometric.

4. Not building to the wind speed rating for the county

While many counties are only rated for 70 mph winds, many other counties have rating much higher, up to 115 mph. Find out what the wind speed rating is for your county, or your specific location, and use that as the minimum design parameter for your tower and antenna system. See also numbers 1 and 3 above.

5. Using the wrong mast for the job

Medium to large sized HF beams can put huge stresses on your mast. Know the difference between pipe and tubing as well as the pressure that your antenna system will put on the mast (tubing is generally acceptable, pipe is not). Then you can make sure that your mast will not bend or break in a big windstorm.

6. Not having the guy wire tensioned properly

Proper guy wire tension is a critical part of a tower's ability to handle wind stresses. Having the wrong tension can be like driving your car with over- or under-inflated tyres: it is potentially dangerous and is not the proper specification from the manufacturer. Find out the proper tension for your installation and tension them correctly.

7. Not having a proper ground system

A good ground system is necessary not only for lightning protection but also for minimizing RFI to adjacent electronic devices.

8. Not doing an annual inspection

Your tower and antennas system is in a constant state of deterioration. While it may be a slow process, it is going on continually. The best way to find and fix small problems before they grow into big problems and potential calamities is by doing an annual inspection.

9. Not fitting the tower sections on the ground

Tower sections, new or used, may not fit easily together. It's much easier to correct alignment problems on the ground rather than up on the tower.

10. Using the wrong hardware

Since tower and antenna materials are in a constant state of deterioration, you should only use hardware that minimizes corrosion. Galvanized or stainless steel materials are the only ones that will survive outdoor use reliably. Using the wrong hardware includes using non-closed-eyebolts. Use only forged or welded eyebolts since the wrong type can open up accidentally with disastrous results.

Derek Fortune ZL1UF (B.Sc.) presents some useful pointers on this popular and rewarding pastime.

Construction of one's own electronics project was once a mighty undertaking. Several tubes and a bulky power supply were required to achieve almost any logic or amplifier function. Enter silicon . . . no longer the case!

"Building block" integrated circuits make easy the realization of ideas like a precise, linear, voltage-to-frequency converter. These devices were limited to the realms of theoreticians less than 20 years ago. How about a preamp device having a flat 20 dB gain and low noise from DC to over 2 GHz. It operates from almost any power supply voltage (change one resistor) and costs less than $10! The choice of project or device you might construct is almost limitless—test gear, home stereo and appliance control devices, projects for the car or boat, projects for the radio shack.

Choice of project

The classic beginners' text on electronics will describe several radio receivers, ranging upwards from the crystal set. Receiver projects are still very popular, and an amateur band transceiver project leads the licensed constructor into QRP (low power) operation. However, many people look towards something different. Magazines are forever spitting out new ideas for projects to build—whether you attempt a crystal set or a computer, there is a thrill in using the equipment you had a hand in making that is not available from the purchase of commercial, branded gear. You cannot help but teach yourself about electronics as you study someone else's circuit and explanations and then recreate it under your own conditions.

Not every project works from the first power-up; but the understanding of the project grows rapidly as the fault-finding technique progresses. If you cannot solve the problem yourself, you can usually find assistance from friends, clubs, or the project author as to finding the problem. Most authors are only too happy to discuss their project on the telephone, or in person. Letters like "it doesn't work, what can I do?" are much more difficult to answer. Interactive discussions allow the author to pose questions, and the two parties can converge on a likely solutioln.

Sources of designs

Magazines are definitely the best sources of varied, up-to-date projects. Nowadays *Silicon Chip* is probably one of the best publication available in this part of the world for a wide range of constructional articles for every purpose and skill level. Several European magazines have also run for years producing similar piles of potential projects. *QST* (published by the ARRL) and a host of other national amateur radio associations' magazines offer projects more selected toward the amateur fraternity. In New Zealand *Break-In* offers some excellent articles. If you have a pet project of your own design working well, get writing! Be sure to include a PCB layout with your article. Do contact a component supplier for details on currently available components before finalizing your design.

Many magazines of this nature are available through libraries. Some, like the Auckland University Engineering School Library, keep bound volume sets of each year's issues of many of these periodicals. Public libraries also keep desk copies available for reference use. Photocopiers are available in all these places for public use.

The annual index is usually included with the December issue of each magazine, so searching for articles on a given topic becomes quite easy. Radio Club libraries also can offer collections of books and magazines to the newcomer.

Choosing designs from Australasian magazines by preference is likely to give the least problems with obtaining components. Some European magazines especially are prone to use components which are very hard to get in New Zealand. More about this below.

Obtaining components in New Zealand

The Dick Smith chain still offers some discrete electronic components. However the range seems to be decreasing steadily.

Contact other local amateurs if you are looking for a component supplier in your region.

Printed Circuit Boards

PCBs for projects in many magazines are available. Marday Services in Auckland offers the PCBs for a number of *Electronics Today International* projects, as well as *Electronics Australia* and others. You can save a lot of time and trouble, especially if you are new to electronics, by obtaining the PCB to go with the published diagrams.

Construction techniques

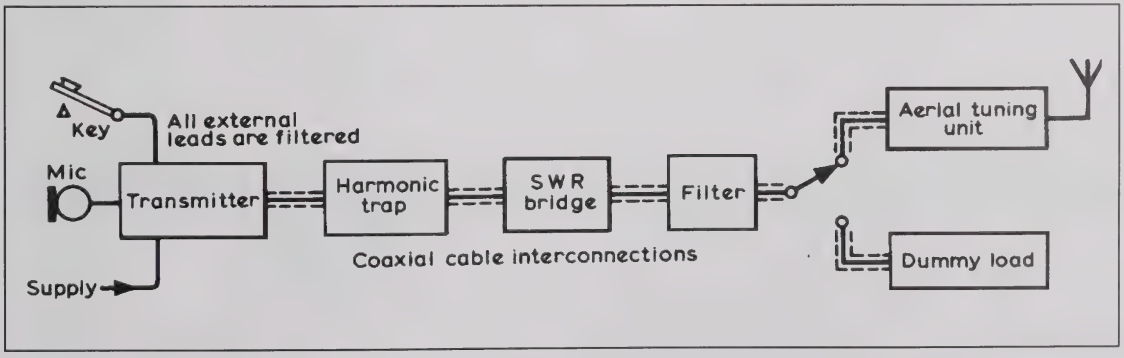
Beginning constructors are well advised to obtain a copy of the *ARRL Handboook*. This monstrous text is probably the single best book anywhere to introduce the enthusiast to every part of amateur radio and contains a chapter on construction techniques. Tools and hardware, soldering and metalwork are described in detail in this chapter. Good soldering technique and care of the soldering iron is very important as you progress beyond your first projects. Most tables you will ever need in amateur radio, from drill sizes to low-pass filter component values are contained in this mighty tome.

AC wiring technique needs to be given special attention in countries like ours which employ nearly the highest mains voltage in the world. One hundred and seventeen volts AC usually gives you a shock you can feel—but 230 V on the other hand, and a good earth on the other, is quite likely to give you something to remember, if you live to remember it at all! Do not use the nearest convenient piece of wire when connecting the mains input wiring for your project. Hookup wire with the normal thin insulation is NOT SAFE for use at 230 V. Avoid odd colours too—the use of conventional colours for mains wiring is strongly recommended. Brown should be used for Phase and blue for Neutral: then you can keep red and black for low voltage rails.

Ordinary three-core power flex is easy to split with a sharp hobby knife drawn along the cable from one end. Pull out the three wires and tear the jacket away from them. In this way you can tear along a length of cable for as much wire as required. This technique yields three correctly coloured, well-insulated, AC-rated wires, perfectly suited to the internal AC wiring required for the project.

Plastic sleeving, or even better, heat-shrink tubing, is easy to fit to the few connections that really matter in most projects. Heat-shrink tubing is available in short lengths in several colours and can be shrunk by several methods apart from the usual gun. Take the time over little things like these, and then you need not fear investigating the equipment whilst it is operating.

Keeping clear when the power is first turned on is not the point. If you make a wiring mistake, you will find it hard to spot if you have used red wire for all connections. You may discover it later; if you put the oscilloscope ground on the red wire going to earth for some reason, you may find it is actually the red wire going to Phase when the clip explodes between your fingers! (The scenario here is imaginary, but someone did do something very similar with my work 'scope once!)



ITU CLASSES OF EMISSION CODE

The basic characteristics of radio emissions are usually given in a three symbol group, such as A1A for Morse code.

These symbols are arrived at as follows:

First symbol—type of modulation of the main carrier.

Second symbol—nature of signal(s) modulating the main carrier.

Third symbol—type of information to be transmitted.

Modulation used only for short periods and incidental purposes, such as identification, may be ignored.

1. First symbol—type of modulation of main carrier

1.1	Emission of an unmodulated carrier	N
1.2	Emission in which the main carrier is amplitude modulated, including angle-modulated sub-carriers—	
1.2.1	Double-sideband	A
1.2.2	Single-sideband, full carrier	H
1.2.3	Single-sideband, reduced or variable carrier	R
1.2.4	Single-sideband, suppressed carrier	J
1.2.5	Independent sidebands	B
1.2.6	Vestigial sideband	C
1.3	Emission in which the main carrier is angle-modulated—	
1.3.1	Frequency modulation	F
1.3.2	Phase modulation	G
1.4	Emission in which the main carrier is amplitude and angle-modulated either simultaneously or in a pre-established sequence	D
1.5	Emission of pulses—	
1.5.1	Sequence of unmodulated pulses	P
1.5.2	A sequence of pulses—	
1.5.2.1	Modulated in amplitude	K
1.5.2.2	Modulated in width/duration	L
1.5.2.3	Modulated in position/phase	M
1.5.2.4	In which the carrier is angle-modulated during the period of the pulse	Q
1.5.2.5	Combination of the above	V
1.6	Cases not covered above in which an emission consists of the main carrier modulated in a combination of angle, amplitude, or pulse	W
1.7	Cases not otherwise covered	X

2. Second symbol—nature of signals modulating the main carrier—

2.1	No modulating signal	0
2.2	A single channel containing quantized or digital information, without the use of modulating sub-carrier*	1
2.3	A single channel containing quantized or digital information, with the use of a modulating sub-carrier*	2
2.4	Single channel containing analogue information	3
2.5	Two or more channels containing quantized or digital information	7
2.6	Two or more channels containing analogue information	8
2.7	Composite system with quantized or digital information together with analogue information	9
2.8	Cases not otherwise covered	X

*This excludes time-division multiplex.

3. Third symbol—type of information to be transmitted

3.1	No information transmitted	N
3.2	Telegraphy—for aural reception	A
3.3	Telegraphy—for automatic reception	B
3.4	Facsimile	C
3.5	Data transmission, telemetry, telecommand	D
3.6	Telephony—including sound broadcasting	E
3.7	Television (video)	F
3.8	Combination of above	W
3.9	Cases not otherwise covered	X

For a more complete description, the three symbol group may be preceded by a four symbol group representing the necessary bandwidth. This group must comprise three numerals and one letter, which must be H, K, M, or G. The letter is placed at the position of the decimal point in the number denoting the bandwidth in hertz, kilohertz, megahertz or gigahertz respectively.

The calculation of necessary bandwidths is complicated and only a few examples can be covered here. For CW Morse, the baud rate is 0.8 times the words per minute. The bandwidth is three or five times the baud rate, depending on the absence or presence of QSB. SSB Phone is just the highest modulating frequency. Double it for AM. FSK, RTTY (any code) is the baud rate plus 1.2 times the frequency shift.

Optionally, two more symbols may be added to the basic characteristics of emissions.

The optional additional characteristics are:

Fourth symbol—details of signal(s).

Fifth symbol—nature of multiplexing.

1. Fourth symbol—details of signal(s)

1.1	Two-condition code with elements of differing numbers and/or durations	A
1.2	Two-condition code with elements of the same number and duration without error-correction	B
1.3	Two-condition code with elements of the same number and duration with error-correction	C
1.4	Four-condition code in which each condition represents a signal element (of one or more bits)	D
1.5	Multi-condition code in which each condition represents a signal element (of one or more bits)	E
1.6	Multi-condition code in which each condition or combination of conditions represents a character	F
1.7	Sound of broadcasting quality (mono)	G
1.8	Sound of broadcasting quality (stereo)	H
1.9	Sound of commercial quality (excluding categories K and L)	J
1.10	Sound of commercial quality with the use of frequency inversion or band-splitting	K
1.11	Sound of commercial quality with separate FM signals for level control	L
1.12	Monochrome television or facsimile	M
1.13	Colour television or facsimile	N
1.14	Combination of the above	W
1.15	Cases not otherwise covered	X

2. Fifth symbol—nature of multiplexing

2.1	None	N
2.2	Code-division multiplex (including bandwidth expansion techniques)	C
2.3	Frequency-division multiplex	F
2.4	Time-division multiplex	T
2.5	Combination of F and T	W
2.6	Other types of multiplexing	X

Examples

25 wpm Morse on a local net:	060HA1AAN
25 wpm Morse on a DXpedition:	100HA1AAN
Classic HF Baudot RTTY:	1K07F1BBN
SSB Phone:	2K85J3EJN
AM Phone:	5K70A3EJN
So-called FM Phone on VHF:	16K0G3EJN
1200 baud Packet on VHF:	16K0G2DCN
9600 baud Packet on VHF:	13K2F1DCN
GPS satellite navigation:	100KG7DCC
On/off keyed Hellschreiber:	050HV1CAN

THE NZART RADIOSCIENCE EDUCATION TRUST

What is the NZART Radioscience Education Trust?

The Trust is a fund from which money will be made available for charitable purposes and the objectives of the Trust are set out in a Deed of Trust. It is structured to operate as a charitable trust to maximise the benefits to the recipients. It is governed by three Trustees who are responsible for all aspects of the Trust's operation.

What are the Trust's objectives?

The objectives for which the Trust has been established are to apply the Trust's assets within New Zealand to promote and encourage education in radioscience, whether by payment of course fees for worthy candidates, the provision of prizes for excellence in educational activities, grants-in-aid, or otherwise as the Trustees think fit. Beneficiaries do not have to be members of NZART, nor will members receive preference.

How does the Trust work?

Currently the Trust provides prizes and awards for students offering a project or exhibit having a radioscience theme at local school Science and Technology Fairs. Organising this activity involves NZART members at national and Branch level throughout the country.

Where does NZART fit into this Trust?

The Deed of Trust specifically sets the Association aside from any involvement. In effect, the Trust will be transparent to the Association since the awards, their control, and the financial aspects of the Trust are totally under the control of the Trustees.

How will the Trust's finances grow?

The Trust operates from the income generated by the capital invested and the accrued interest is used to finance the awards and prizes etc. Apart from the foundation donation, other significant capital has come from anonymous donors and surpluses from NZART conferences.

The Trustees welcome inquiries from any person or organisation wishing to support the Trust by donation; replies will be treated in the strictest confidence. The Trustees intend that the fund should grow at least in line with inflation to ensure benefits are not eroded.

The Trust is recognised by the IRD as a "Charitable Trust". Briefly, this means that the Trust's income is not taxable and that in most cases donations to the Trust are tax-deductible.

Who are the Trustees and how are they appointed?

The three Trustees are all NZART members of long standing who hold the Association, its aims and objectives at the highest level. The inaugural Trustees are:

Terry Carrell ZL3QL, Christchurch. Life Member, Past-President, and ex-IARU Liaison Officer.

Peter Norden ZL2SJ, Featherston. President NZART.

John Walker ZL3IB, Christchurch. Editor *Break-In*.

The President of NZART, in consultation with the Vice-President, will appoint the Trustees as and when necessary.

The Science and Technology Fair organisation

Nationally, the Science and Technology Fair scheme is sponsored by a number of organisations and, at present, there are 22 regional Science and Technology Fairs whose winners go on to take part in the National Science and Technology Fair. More information on these maybe found on the Royal Society's web page <www. rsnz.govt. nz/>.

What are the prizes for?

The aims of the Trust are broad. The Trustees wish to support and encourage all and any aspect of radioscience. Relevance to amateur radio is a plus but not a prerequisite.

For the time being the Trust sponsors a prize to the value of $100 at each of the local area Science and Technology Fairs. Local NZART Branches are asked to provide judges and other forms of support for these events. The Trust also provides a Certificate of Merit (for the prize winner) and a Certificate of Commendation (one or more of which may be awarded at the judges' discretion). Prizes will only be awarded where the judges consider there is a worthy recipient.

Starting in 2007 the Trust plans to offer limited "Grants-in-aid" to support suitable radioscience projects in schools. Full details and application forms will be available in *Break-In* and on the Trust's web page

It is hoped that in the long term this two-way exchange will generate interest in radio and electronics leading to more young radio amateurs. At the same time it provides Branches with a means of local involvement and recruitment.

Looking ahead: let's talk about the Trusts, bequests and your will

By supporting the Trust you can partake in the development of new and exciting communications technology that is rapidly adding more options for a career, education, international understanding, and a wonderful pastime. You can help preserve this experience and pass it on to a new generation of New Zealanders by contributing to the Trust. You can be part of the future now!

It's quite natural to wonder about the future. Potential contributors may ask in what way they can support the NZART Education Trust throughout a lifetime or beyond.

You may have had in your amateur radio activity an experience that has enriched your life, or seen or heard of something special that you wish to help perpetuate. Perhaps the Amateur Service with its many facets of activity, and public service, has made a lasting difference to your life, education and career.

A practical way to ensure future interest in Amateur Radio is by making a bequest to the Trust. The legally binding obligations on the Trust, as set out in its Deed of Trust, ensure that your donation will be preserved and used exclusively for the purpose intended, the promotion and encouragement of education in radioscience. We recommend strongly that a solicitor provide assistance when you are considering a bequest, or any modification to your will, as the law must be considered when executing a bequest. Your solicitor can assist you to tailor your will to your precise needs.

The NZART Radioscience Education Trust is a Charitable Trust founded the NZART Inc to promote and encourage education in radioscience. The Trust's income is tax-free and donations to the Trust are tax-deductible to the extent permitted by the Income Tax Act 1994.

Correspondence regarding the Trust and contributions should be addressed to: The Trustees, NZART Radioscience Education Trust, C/- PO Box 1733, Christchurch.

Information about the Trust is also available on the NZART web site <www.nzart.org.nz>.

SHIFTING HOUSE?

REMEMBER TO ADVISE THE FOLLOWING

1. AMATEUR LICENCE
Inform the Radio Inspector at your nearest Ministry of Economic Development (Radio Spectrum Management).

2. *BREAK-IN* DELIVERY
Advise the Office Manager, NZART HQ
PO Box 40-525, UPPER HUTT 6415

of your new address. Mention your call-sign and Membership Number (see page 4–16).

This advice will be forwarded to the *Call Book* Call-sign Compiler who will amend your *Call Book* listing.

NZART AFFILIATES

A document in the NZART Councillors' Handbook, the NZART Policy 1998, reads:

31 General

31.1 The following are NZART affiliates:

31.1.1 Old TImers' Club (OTC).
31.1.2 Women's Amateur Radio Organization (WARO).
31.1.3 Cook Islands Amateur Radio Club
31.1.4 Kapiti Coast Museum.
31.1.5 Canterbury Amateur Radio Development Society (CARDS).
31.1.6 Suburban Amateur Radio Club (SARC).

International Morse Preservation Society (Fists)

New Zealand and Australia

The FISTS Club, (International Morse Preservation Society) is one where veteran operators help newcomers and less-experienced operators learn and improve CW proficiency. The membership has grown from 300 in its first year of operation to over 5,300 members worldwide and is one amateur radio's fastest growing organisations.

The New Zealand Chapter was formed in 1998 with Ralph Sutton ZL2AOH as the VK/ZL representative, membership now stands at over 120.

FISTS supports the use of Morse code

The club is devoted exclusively to CW operators and CW operating. We have three straightforward goals:

Further the use of CW

Engender friendships among members

Encourage newcomers to use CW

Brought together by a common love of Morse, FISTS members actively participate in a wide variety of amateur radio activities including nets, rag chewing, earning awards, QRP, contesting and of course "Elmering." All activities include both slow and higher speeds and emphasise courteous operating practices.

FISTS Club membership

FISTS members are young, old, both OMs and YLs—they live all over the world including every State in the USA and all enjoy CW communications at widely varying proficiency levels.

FISTS is not tied to any commercial interests and has no paid employees. VK and ZL members receive the UK produced newsletter Key Note and a local supplement FISTS Down Under. All activities are funded from annual fees of $15.00 (spouses of existing members can join at no cost).

Requirements for membership of the FISTS Club are very simple. One simply has to like Morse code! You do not need to be a member of any other organisation and there is no minimum Morse proficiency requirement. You don't even have to be a licensed amateur.

FISTS QSL Bureaux

FISTS operate bureau in the USA, UK, Japan, Korea and New Zealand/Australia for the quick exchange of QSL cards between members. This is a no-cost service to members.

FISTS contests

FISTS conducts contests for members and others

FISTS awards

FISTS members participate between themselves in a popular award scheme that includes the following:

Century award is for 100 FISTS contact points

Platinum Award is for 100 Century Award contacts

250 Century award is for 250 Century Award holder contacts

500 Century Award is for 500 Century Award holder contacts

Silver Award is for 250 FISTS contact points

Gold Award is for 500 FISTS contact points

Diamond Award is for 1000 FISTS contact points

Worked FISTS all US States—for exchange between FISTS members in QRP as well as QRO categories.

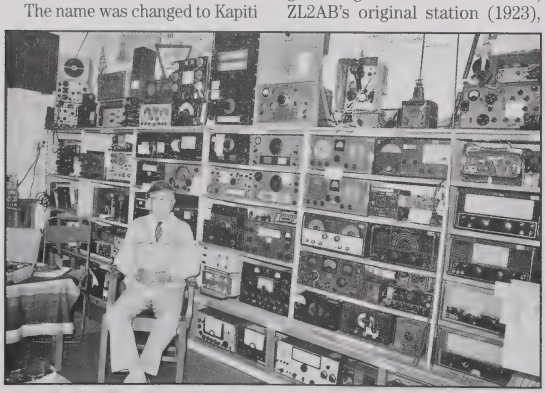
Membership and other inquiries:
Ralph Sutton ZL2AOH
12c Herbert Gardens
186 The Terrace
Wellington 6001
Telephone: (04) 473-0847
Fax: (04) 473-0848
E-mail: <ZL2AOH@ihug.co.nz>.
Web: <www.fistsdownunder.morsekeys.com>.

KAPITI COAST MUSEUM—WAIKANAE

The Waikanae District Museum was established in 1984 in the old Post Office Building, 9 Elizabeth Street, Waikanae—the Post Office building dating back to 1907. The driving force behind the radio collection consisted of George Anderson ZL2JG, Roy Curry ZL2AIP, Reg Danrell ZL2DR, Len Simpson ZL2HH, Les Wright and Dr Philip Bray.

The name was changed to Kapiti Coast Museum in 1993 to reflect the change in local authority organization. The interior of the building was radically upgraded during 1993/94, more emphasis placed on local history and the museum, under its new name, and was reopened in October 1994 by the Rt. Hon. Doug Graham.

The radio collection includes a good range of domestic receivers, ZL2AB's original station (1923), and ZL4GE, now ZL2JG, 1933 Hartley transmitter. The ZL2GX collection of Collins, National HRO and other receivers is on display. The Amateur station ZL6KCM is affiliated to NZART and RSARS and vintage equipment operated.



Pictured is George Anderson ZL2JG, backed by a number of the classics of yester-year.

A collection of early domestic receivers dating from 1925. ZL2AB's original station is displayed in the foreground.

The radio collection includes a good range of domestic receivers, ZL2AB's original station (1923), and ZL4GE, now ZL2JG, 1933 Hartley transmitter. The ZL2GX collection of Collins, National HRO and other receivers is on display. The Amateur station ZL6KCM is affiliated to NZART and RSARS and vintage equipment operated.

The museum also has a collection of telegraph keys and associated instruments plus a very good display of telephone equipment.

The museum is interested in obtaining items of historical interest and always keen to welcome new members to assist with the management of the museum and restoration of exhibits. The museum is open from 2pm to 4pm Saturday and Sunday and all Public Holidays. The museum can be opened outside these hours on request by contacting George Anderson (04) 905-6884.

WARO New Zealand Women Amateur Radio Operators — Call-sign ZL6YL

Object

To promote and encourage interest in Amateur Radio amongst women.

WARO was formed in 1961–62 by a small but keen group of YL transmitters and has steadily grown both in numbers and enthusiasm.

For the annual subscription (currently $15.00 for New Zealand members) members receive four quarterly Bulletins containing items of interest to operators and friends, with special attention to YL activities.

Associate members—YLs who do not have a transmitting licence are welcome, as are YLs from overseas, many of whom are sponsored by ZL members.

Friends of WARO—persons who support WARO may become Friends of WARO by making a donation of not less than the current subscription.

The Thelma Souper Memorial Contest is held annually in early April in honour of our founder. It is open to YLs and OMs and is held on the lower end of the 80 m band.

The WARO Achievement Award may be awarded annually to persons nominated by their peers for outstanding achievements in any aspect of Amateur Radio. Nominations close at the end of March each year and the Award is presented at the AGM in June. The form this takes is the Myrtle Earland Memorial Rosebowl in honour of New Zealand's first licensed YL.

WARO also operates several awards including the WARO Award and the Mountain Buttercup Award. For further details on these see the Awards section elsewhere in this Call Book.

Elected Officers

President

Rosemary Boshier ZL1RO.

Vice-President

Lynnette McDonald ZL1LL.

Secretary

Maxine Rowe ZL1FW.

Treasurer and Membership Applications

Margaret Bretherton ZL1MB.

Executive

Sue Holland ZL3AHT.
Bev Gillman ZL3TCR.

Award Manager

Lynnette McDonald ZL1LL.

Contest Manager

Bev Osborne ZL1OS.

Sponsorship Secretary

Celia Reed ZL1ALK.

Librarian

Joline Beale ZL1UJB.

Official Broadcast Co-ordinator

Rosemary Boshier ZL1RO.

***Break-In* Columnist**

Biny Owen ZL2AZY.

Bulletin Editor

Bev Osborne ZL1OS.

YL Nets:

WARO VHF

Auckland: Sunday 7pm NZ time 146.900 (Bombay 690).

Canterbury: Tuesday 9pm NZ time 147.250 (Canterbury 725).

WARO HF

WARO: Mondays 8pm NZ time 3.695MHz ±.

WARO Executive: Second Sunday 0800 UTC 3.695MHz ±.

International

ALARA: Mondays 1030 UTC 3.580 MHz.

YL "222": Mondays 0600 UTC 14.222 (Net Control June VK4SJ).

VE/VK/ZL: Fridays 0500 UTC 14.148 MHz.

BYLARA: Wednesdays/Saturdays 1115z BST 7050/7090 ± QRM.

CLARA: Tuesdays 1700 UTC 14.120 MHz (alternate frequency 14.180 MHz).

YLRL:

YL Open House—Wednesdays 1900 UTC 14.288MHz (one hour earlier daylight savings time).

Tangle Net—Thursdays 1800 UTC 14.298MHz.

European DX/YL: Thursdays 1700 UTC 14.242 MHz±. (Net Control Christine GM4YMM.)

DX sponsorship

It is great to sponsor a YL from another YL organization—increases your awareness of other countries and their people. We have DX-sponsored members from all over the world and it does help to forge greater bonds between all of us. To sponsor a YL contact the Sponsorship Secretary for further information and contacts. It costs the value of a DX membership subscription and the chance to exchange news and views with each other.

YL Get-Togethers

These are held regularly throughout the country as well as the annual Get-Together at the time of our AGM in June. Consider going along to these affairs—they are a lot of fun.

WARO Bulletin/*Break-In* page

Copy is always required for these publications and any news/views of/by or from members are very welcome by the two persons concerned. Photographs are especially welcome—how about sending some in NOW.

Enquiries are always welcome from any YL for membership/fellowship in all of our activities. Feel free to contact any of the above-mentioned YLs or any other member of WARO. And always be on the lookout for ZL6YL—our own call-sign.

WARO on the Internet

<www.qsl.net/zl6yl> or <www.nzart.org.nz>.

Visit the WARO website where you will find past issues of the WARO Bulletin and WARO news. There is also a comprehensive history of WARO, and links to DX YL amateur radio organisations.

AFFILIATED ACTIVITIES

SPAM—Society for the Preservation of Amplitude Modulation

Secretary/Treasurer

Roy Symon, ZL2KH
25 Annandale Street
New Plymouth

Telephone

(06) 758-2156.

E-mail

<zl2kh@nzart.org.nz>.

Librarian and Archivist

John Nicholson, ZL1AUB
30 Alfred St
Fairfield
Hamilton 2001

Telephone

(07) 855-5435.

E-mail

<johnn@wave.co.nz>.

Meetings

The Annual General Meeting is held annually at Queen's Birthday Weekend in conjunction with the NZART Conference.

Aims and Objects

To preserve Amplitude Modulation as a means of Amateur Radio communication.

General

In order to keep expenses to a minimum, membership lists, financial statements, information, etc., sought by members will be sent on receipt of a stamped and addressed envelope. The information sought will be sent as soon as possible.

Nets

There are nets operating at present on AM on 3.850 MHz at the following times:

Friday evenings at 2000 hours (Northern area based).

Those interested are urged to call "CQ AM" on 3.850 MHz AM any evening at 2000 hrs local time if they want a QSO.

Subscription

$5.00, payable once only on joining. A collection will be taken up each year at the Annual General Meeting, and donations will always be acceptable.

Bulletins

Bulletins are sent out regularly by e-mail to those who have provided their e-mail addresses. These are sent by the "blind copy" method so individual's addresses are not circulated to everyone. The bulletins include news, requests for information, parts and equipment available, parts or equipment wanted, plus anything else that might be of interest to members.

OLD TIMERS' CLUB (ZL)

The objects of the Old Timers' Club (ZL) are set out in our Constitution adopted in 1993. They are as follows:

(1) To recognise service to Amateur Radio;

(2) To revive and maintain interests and good fellowship among the older members in the common cause.

(3) To offer advice and encouragement to newer Amateurs.

The Club is affiliated to the New Zealand Association of Radio Transmitters (Inc).

The Annual General Meeting is held on the Sunday morning of Queen's Birthday weekend (in conjunction with the NZART Conference) so it is possible that there will be changes in those holding office after that date.

Patron

Harry Martin ZL1PX.

Grand Old Man

Bram Bramley ZL3ME.

Secretary/ Treasurer

Roy Symon ZL2KH.

Postal Address

OTC, 25 Annandale Street, New Plymouth.

Telephone

(06) 758-2156.

E-mail

<zl2kh@nzart.org.nz>.

Roy can also be contacted at 1000 hours most Sunday mornings during the OTC Net on 7.058 MHz.

Any material for the *Break-In* page should be sent to: ZL2KH, 25 Annandale Street, New Plymouth.

Net Controllers

Roy Symon ZL2KH.

Don Dalrymple ZL3SZ.

Bob Banks ZL1AUI.

Reg Truman ZL1UZ.

80 m AM Phone—Doug Alexander ZL2AWF.

District Representatives

Peter Anderson ZL1LR, Don Dalrymple ZL3SZ, Don Bradfield ZL1DAQ, Alan Taylor ZL4AT.

OTC Scribe

Roy Symon ZL2KH.

A National Single Side-band Net is held every Sunday morning at 9.30 am. The call-sign is ZL6OTC. The frequency is 7.058 MHz but if propagation is poor on 40 m, the net may QSY to 3.865 MHz. An AM Net is also run on Sunday morning at 10.30 am on 3.850 MHz. The Secretary gives the Club News at 10.00 am on the SSB Net.

Full membership is available to any holder of a ZL call-sign who has held an amateur licence for the last 25 years or more and is still an active amateur.

In addition, Associate Membership is available to any ZL amateur who has attained the age of 60 years (and over) and has been an active amateur for 10 or more years. Voting privileges are not available to Associate Members.

Application forms for membership may be obtained from a District Representative or from the National Secretary. A joining fee of $10.00 is payable on application.

Evidence of eligibility which is to be submitted shall include, full name, present call-sign, original call, operator's certificate number and date of original licence. All applications for membership shall be proposed and seconded by present OTC members.

On acceptance a Certificate is issued to all Full and Associate Members, and they will be listed in the *Blue Book*. In addition further handsome certificates are available on request to those who attain 50, 60 and 70 years of Amateur Service.

All members of OTC are eligible to wear the Peacock Blue NZART Badge with call-sign so long as they are financial members of NZART. This badge is available from NZART HQ at the current price of the similar black membership badges.

Articles relating to all aspects of OTC or of vintage radio for publication in the OTC section of *Break-In* are welcomed by, and should be addressed to our Scribe, Roy Symon ZL2KH, 25 Annandale Street, New Plymouth.

JAMBOREE ON THE AIR

October 21 and 22 2006
October 20 and 21 2007

by JIM PARNELL ZL2APE

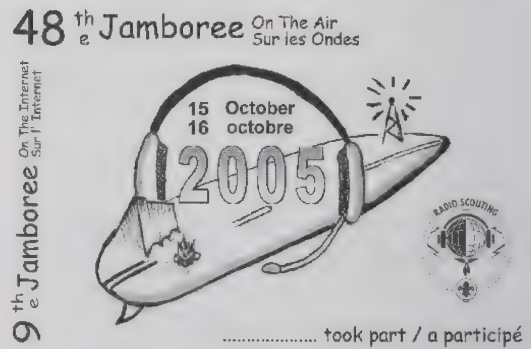
JOTA is an annual event in which about 500,000 Scouts and Guides all over the world make contact with each other by means of amateur radio. It is a real Jamboree during which Scouting and Guiding experiences are exchanged and ideas are shared, thus enhancing worldwide Scouting and Guiding. JOTA has been held annually since 1958 and Scouts and Guides are encouraged each year to invite radio amateurs to help them take part.

There are great potential benefits to amateur radio by encouraging young people to take part in JOTA as it introduces them to the hobby that you as an amateur enjoy. So it is in the interests of New Zealand amateurs to anticipate invitations by Scouts and Guides and approach their leaders, offering their services and equipment.

The easiest way for Scouts and Guides to take part in JOTA is for them to visit an amateur station sometime during the JOTA period. At the station, the amateur establishes a contact with another amateur station and then hands over the microphone to the Scouts and/or Guides. Satellite, Packet, SSTV and other modes of communication (including e-mail) are now used for JOTA as well as the normal modes using HF and VHF/UHF.

Many stations are set up at Scout or Guide Headquarters, or at some local "interesting" or appropriate venue. Other JOTA stations are set up at camps, the radio activities being incorporated into the camping programme.

JOTA is now run concurrently with the Jamboree on the Internet (JOTI) and JOTA and JOTI stations are often combined on the same site. There is much information about JOTA and JOTI on the New Zealand Scouting web pages: <www.scouts.org.nz/>.



On the world scout JOTA web pages: <www.scout.org/jota>.

And on: <www.jimparnell.co.nz/jota/jota.html>.

JOTA and JOTI are both co-ordinated by the World Scout Bureau and are organised by National Organisers in each Scouting and Guiding country.

A regional JOTA is now held by the Asia-Pacific Region Scouting organisation early in August of each year, but the present New Zealand Scouting intention is to concentrate on participation in the world-wide activity in October.

JOTA is always held during the 48 hours (local time) of the third full weekend in October. In the year 2006, JOTA will be held on October 21 and 22 (Labour Weekend), and in 2007, it will be on October 20 and 21 (this is also Labour Weekend).

Jim Parnell ZL2APE
<zl2ape@nzart.org.nz>
National Organiser for JOTA in New Zealand

The following programmes offer information on DX news, receiver reviews, media features, propagation, satellites broadcasting trends, amateur radio and the Internet. They are reproduced here courtesy of Ernest Riley of the Ontario DX Association who exchange magazines with the New Zealand Radio DX League.

UTC Day	Time	Programme	Station	Freq.
SATURDAY	0000	Allan Weiner Worldwide	WBCQ	7415
	0120	DX Corner	Radio Budapest	9590
	0240	DX Programme	Radio Bulgaria	9700, 11700
	0245	DXers Special Supplement	R.A.E.	11710
	0250	DX Corner	Radio Budapest	9795
	0510	DX Corner	Radio Japan	6110 bi-weekly
	0730	DX Partyline	HCJB	11750
	1000	Radio Weather	WHRI	7520
	1010	DX Corner	Radio Japan	6120 bi-weekly
	1030	DX Partyline	HCJB	15400
	1210	World Wide Friendship	KBS World Radio	9650
	1230	Radio Weather	WHRA	15665
	1230	World of Radio	WRMI	9955
	1245	DX Corner	Voice of Turkey	15450 bi-weekly
	1330	Wavescan	WRMI	9955
	1430	DX Partyline	HCJB	15390
	1430	World of Radio	WRMI	7385
	1530	World Wide Friendship	KBS World Radio WRN	
	1600	World of Radio	WWCR	12160
	1730	World of Radio	WRN	
	1930	DXing With Cumbre	WHRI	15285
	2000	This Week in Amateur Radio International	WBCQ	7415
	2105	DXers Unlimited	Radio Habana Cuba	9505, 11760
	2140	Radio Waves	Radio Ext. de España	9595, 9840
	2210	DX Corner	Voice of Turkey	9830 bi-weekly
	2330	DXers Unlimited	Radio Habana Cuba	9550
SUNDAY	0010	DX Corner	Radio Japan	6145 bi-weekly
	0018	The Whole World on the Radio Dial	Radio Ukraine	7440
	0030	Radio Weather	WHRI	7555
	0040	Radio Waves	Radio Ext. de España	15385
	0140	DXers Unlimited	Radio Habana Cuba	6000, 9820
	0145	Ask WWCR	WWCR	5070
	0200	Electronic DX Press	WWCR	5070 bi-weekly
	0210	World Wide Friendship	KBS World Radio	9560
	0215	DX Partyline	WWCR	5070
	0230	DXing With Cumbre	WHRA	5850
	0230	World of Radio	WWCR	5070
	0230	World Wide Friendship	KBS World Radio WRN	
	0315	DX Corner	Voice of Turkey	5975, 7270 bi-weekly
	0318	The Whole World on the Radio Dial	Radio Ukraine	7440
	0335	DXers Unlimited	Radio Habana Cuba	6000, 9820
	0530	DXers Unlimited	Radio Habana Cuba	6000, 6060, 9550, 9820, 11760
	0630	World of Radio	WWCR	3215
	0830	World of Radio	WRN	
	0930	Radio Weather	WHRI	7520
	0930	World Wide Friendship	KBS World Radio	WRN
	0945	Ask WWCR	WWCR	5070
	1110	DX Corner	Radio Japan	6120 bi-weekly
	1230	Radio Weather	WHRA	15665
	1430	International Radio Report	CKUT Montreal	www.ckut.ca
	1430	DX Partyline	WRMI	7385
	1530	DXing With Cumbre	WHRI	11785
	1730	World of Radio	WRN	
	1800	Allan Weiner Worldwide	WBCQ	7415
	2000	Radio Weather	WHRI	15285
	2100	This Week in Amateur Radio International	WBCQ	7415
	2230	Radio Weather	WHRA	11765
MONDAY	0230	DXing With Cumbre	WHRA	5850
	0300	Radio Weather	WHRI	7520
	0300	World of Radio	WBCQ	9330
	0330	DXing With Cumbre	WHRI	7315
	0415	World of Radio	WBCQ	7415
	0830	Mailbox	RNZI	7145 bi-weekly
	1130	Mailbox	RNZI	9870 bi-weekly
	1230	Ask WWCR	WWCR	15825
	1330	Mailbox	RNZI	7145 bi-weekly
	1530	Mailbox	RNZI	7145 bi-weekly
TUESDAY	0330	Mailbox	RNZI	13730 bi-weekly
	0930	DX Partyline	WWCR	9985
	0945	Electronic DX Press	WWCR	9985
	2105	DXers Unlimited	Radio Habana Cuba	9505,11760
	2335	DXers Unlimited	Radio Habana Cuba	9550
WEDNESDAY	0135	DXers Unlimited	Radio Habana Cuba	6000, 9820
	0335	DXers Unlimited	Radio Habana Cuba	6000, 9820
	0530	DXers Unlimited	Radio Habana Cuba	6000, 6060, 9550, 9820, 11760
	0930	World of Radio	WWCR	9985
	2200	World of Radio	WBCQ	7415
	2300	World of Radio	WBCQ	18910
THURSDAY	0245	DXers Special Supplement	R.A.E.	11710
	0730	Radio Weather	WHRA	11565
	2130	Radio Weather	WHRI	15665
FRIDAY	0945	Ask WWCR	WWCR	9985
	2030	World of Radio	WWCR	15825
	2100	The Real Amateur Radio Show	WBCQ	7415
	2340	DX Programme	Radio Bulgaria	9700,11700

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Radio Reading Service ____ Inside Front Cover
TypeShop Limited ____ Inside Front Cover

Thanks to Tait Electronics for supporting Amateur Radio in New Zealand for many years—see outside back cover.

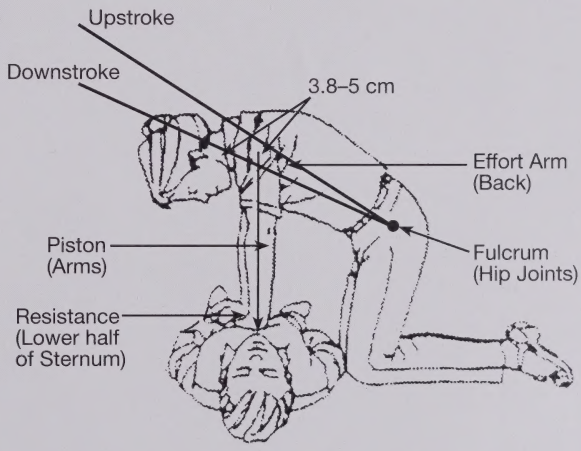
Single Rescuer C.P.R.

Initial Approach
- Ensure own safety
- Assess consciousness ("are you okay?")
- Call/yell for help
- Position victim

Airway
- Clear airway (remove objects/fluids from mouth
- Open airway: head tilt–chin lift

Breathing
- Check breathing—10 seconds—LOOK, LISTEN, FEEL
- Rescue breathing: Give two effective breaths (up to five attempts)

Circulation
- Check for signs of circulation (10 seconds only)
- Rate 100
- Ratio 30/2
- After 30 compressions give two effective breaths



Checks
- Reassess for signs of circulation every three minutes

Continue C.P.R. Until:
- The victim's own pulse and breathing have been restored
- A doctor or other health professional takes over
- You are exhausted

DO NOT GIVE UP

Even when things look hopeless, until trained help arrives

95% exported
100% kiwi
At Tait, we're proud of the fact that nearly all of our products are exported, with over 150 countries worldwide now home to Tait equipment.
But desipite our global success, we never lose sight of our roots. That's why we're proud to sponsor the New Zealand Association of Radio Transmitters' Conference.
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